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PAPERS, PAMPHLETS AND REPORTS

PERTAINING TO THE EARLY HISTORY OF THE

BOSTON AND MAINE

AND

MAINE CENTRAL

RAILROADS.

ALSO PAMPHLETS ON THE NORTHWEST AND NORTHERN PACIFIC RAILROAD, BY

GEN. ISAAC I. STEVENS.

PRESENTED TO THE
ANDOVER MEMORIAL HALL LIBRARY,
1893
BY MAJOR GEO. T. CLARK.

The article on the following pages on the early history of the Boston and Maine Railroad was printed in "The Boston Evening Transcript," July 15, 1893. I was employed in the engineering department of the road most of the time from its commencement in 1835 to its completion to South Berwick in 1843.

GEO. T. CLARK.

Muskegon Mich., Sept. 1, 1893.

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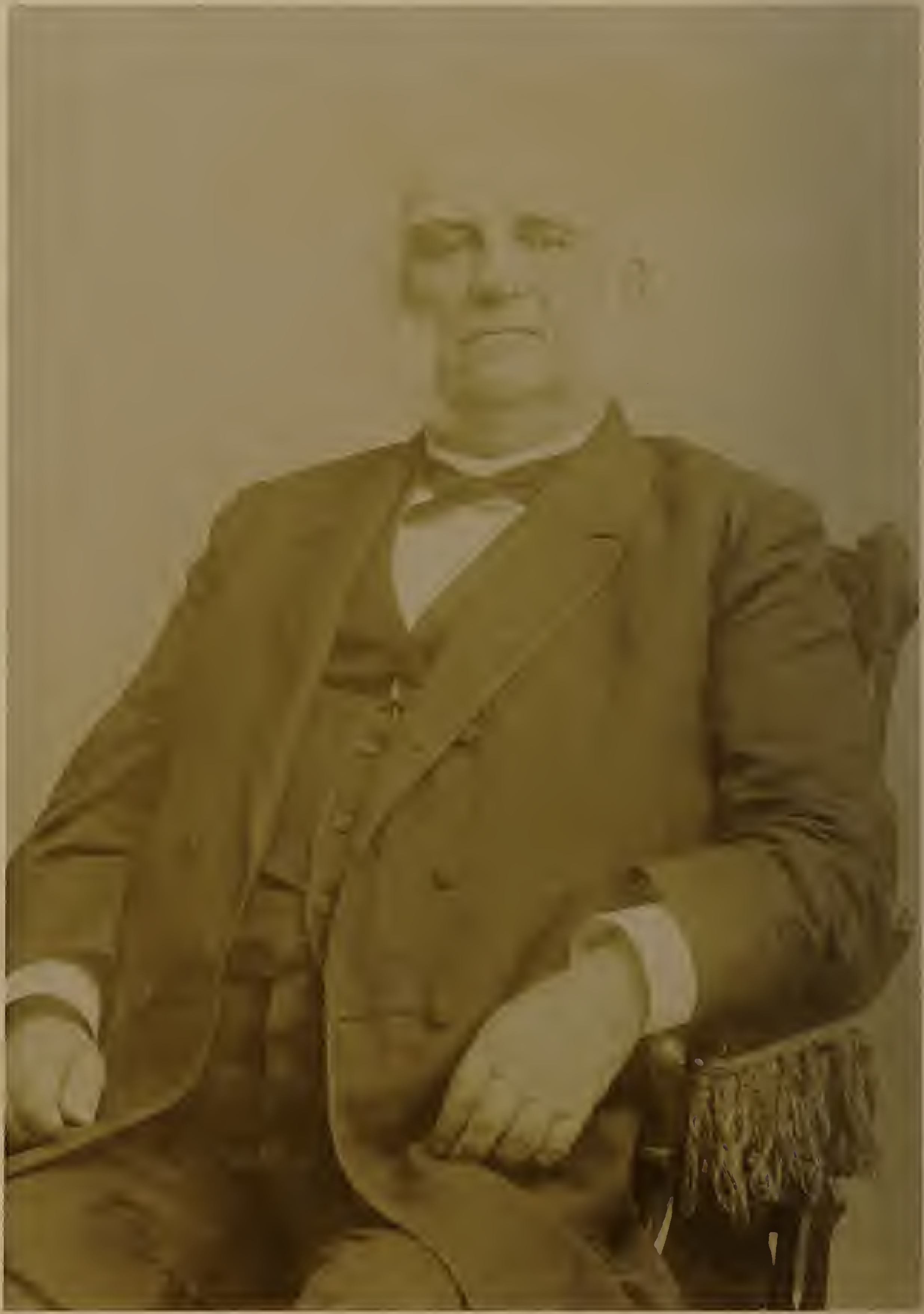

George J. Clark
Born in Andover, now North Andover
June 23d 1818
Taken Sept 1st 1893
age 75. yr.

Growth of the Boston and Maine, as Noted by a Chain-Boy of 1835.

To the Editor of the Townsman:—

[A long article under the above heading recently appeared in the *Boston Transcript*. The "chain-boy" will be readily recognized by old Andover citizens as Maj. Geo. T. Clark, son of Hon. Hobart Clark, the founder of the original "Andover and Wilmington Railroad." Maj. Clark has had, himself, a long and successful career in the profession of engineer, and at the age of seventy-five is in good health at his old home in Muskegon, Mich. Can you not find room for the main body of this interesting article? Your readers will scarcely believe that Mr. Charles S. Storrow, spoken of as a superintendent of the Boston and Lowell Railroad at this time—nearly sixty years ago—is the hale-looking gentleman often seen on our streets as a summer resident.

It is a matter of congratulation that Mr. Clark proposes to place in Memorial Hall Library many papers of interest connected with the local history of Andover.—C. C. C.]

Sept 1st 1893

EARLY RAILROAD DAYS.

Growth of the B. & M., as Noted by a Chain-boy of 1835.

Piecemeal Construction of the Great Eastern Line—Andover Enterprise Built the System—Some Crude Methods of Engineering.

The position that great corporation—the Boston & Maine—now occupies among the leading railroads of New England brings to mind many recollections of its early history.

It may with truth be said of it, as is often said of prominent individuals, that it was born of poor but honest parents. In the fall of 1832 Hobart Clark, Esq., of Andover, in making a journey to Utica, N. Y., to visit a brother, passed over what was then known as the Albany & Schenectady railroad, the then only railroad west of the Hudson River.

At that time the Boston & Lowell, Boston & Worcester and Boston & Providence railroads were under construction, but no portion of any was ready for operation.

From thus seeing a railroad in actual operation, Mr. Clark became convinced that a branch railroad to Andover, starting from the Lowell railroad at Wilmington, would do much in advancing the interests of his town.

Mr. Clark was a lawyer, and on his return home that matter was discussed in his office by many of the prominent citizens. This agitation finally resulted in the calling of a public meeting to consider it. This meeting was held in the hotel of James Locke, which stands on Main street, Andover, about midway between the centre of the town and the Theological Seminary—the house was for many years afterwards occupied as the residence of the late Hon. N. W. Hazen.

At this meeting it was resolved to petition the Legislature for a charter for a railroad from Wilmington to Andover, to be known as the Andover & Wilmington Railroad, and Mr. Clark was employed to look after it before the Legislature.

The charter was granted March, 1833. The company was organized in June, 1833, with the following-named directors: Hobart Clark, Abraham Marland, Amos Abbot, John Smith, Merrill Pettingill, all Andover men.

Hobart Clark was made president. The capital stock of the company was one thousand shares at one hundred dollars per share. Colonel Loammi Baldwin of Charlestown, one of the most distinguished civil engineers of his time, was employed by the company to make surveys for its location, which he did in the fall of 1833. The writer assisted Colonel Baldwin as the boy to carry his instruments, and well remembers their ponderous weight as compared with the railroad surveyors's instruments of later days.

A start was made, diverging from Boston-Lowell line, at Wilmington, and proceeding in the direction of Andover, but following highways for a considerable part of the way, rather than attempting to locate the line of the railroad itself. Colonel Baldwin spent but a portion of the day, and then left the further course to his principal assistant, Mr. Thomas J. Pratt. A letter of Colonel Baldwin's to Mr. Clark appears in the first report of the company. Colonel Baldwin found the line practicable, but, having other engagements, could not give it sufficient attention to make the final location, and Mr. Joshua Barney, who had been employed on the Providence road, was engaged for this purpose. His report of the survey was made to the directors Jan. 14, 1834. In this he estimates the cost of the road and equipment to Andover to be $110,000.

Work was commenced on the Andover & Wilmington railroad in the spring of 1835, or at about the same time that the Boston & Lowell main line was nearing completion.

The cautious, step-by-step method followed in extending the charter and pushing forward the work is worthy of note in these days of bold enterprise.

As soon as the road was fairly started toward Andover, or in April of this year (1835), a second charter was obtained by Mr. Clark and his associates, extending the road to the central village of Haverhill, and its name was changed to

Andover & Haverhill Railroad.

Through Mr. Clark's suggestions and action, also in April of this year 1835, a charter was obtained from the Legislature of New Hampshire for a road from the line of Massachusetts through that State to the Maine boundary, under the name of the Boston & Maine Railroad.

In the winter of 1836 he obtained a charter from the Legislature of Maine, extending the road to Portland. The first section of the road was opened to Andover, Aug. 6, 1836; to the Merrimack river, Bradford, in the fall of 1837; Exeter, 1840; Dover, 1841; to South Berwick Junction, 1843. The Eastern railroad started at about the time that the Andover road was nearing Haverhill.

The Massachusetts portion of the road was built almost entirely by stock subscription taken between Andover and Haverhill, not particularly as an investment, but to promote the interests of the towns through which it passed; and to their credit it can be said that before the granting of the charter for another road East, the stockholders of the Andover and Haverhill had expended $75,000, and to the citizens of Andover, I think, should be given the credit of originating the *first* Eastern railroad.

The Andover & Wilmington directors in their first report, made Oct. 21, 1834, say, "As it is believed that this is to be the first section from the Lowell railroad of a railroad to be extended over the Merrimack river to Haverhill, and so on through New Hampshire to Maine, it would be best, in moving the earth to form the road-bed, to have reference to another set of tracks to be laid at a future period, so far as it can be done with convenience and without additional expense." It will be remembered that this was written many years before the advent of the telegraph, and it was then believed that no road could be worked with entire safety without being double-tracked.

After the road was opened to Merrimack River, the directors, in an appeal to the stockholders for further aid in extending the road east, make this statement, that "the road then, to the Merrimack River, cost $400,000, including engines, cars, etc. The stock which we all paid in amounts to $275,000," and the State had loaned them $100,000, and they ran in debt $25,000; that there were three hundred stockholders, and a great proportion of then original subscribers and mostly men of small means.

The building of a railroad then, as now, was not without its anxieties and perplexities—stock subscriptions had to be obtained to pay for it, and this required personal solicitations, which meant hard work and lots of it.

Money then was comparatively scarce; there were but few capitalists that advised this kind of investment. You not only had the labor of

getting subscriptions, but you had also the labor of collecting the money of them afterwards.

Men with a property of $10,000 then were considered as wealthy as the man with his $100,000 today.

Many subscribed for stock without expecting to realize any returns from it, but simply to aid and help build up their particular locality. A few did it, however, with the full belief that it was a paying investment.

The Boston & Maine road was not the favorite one with the large capitalists, as there were few large towns on its line to give it business.

Lawrence was not then in existence.

The State had given its aid to other roads, and the Andover & Haverhill ventured to ask for a loan of $100,000. It was obtained, but not without opposition and some ridicule from their opponents and rivals from extending the road east.

Some of the stockholders in the Boston & Lowell were induced to subscribe large amounts to aid it, with the expectation that the transportation it would bring their road in freight and travel would increase the value of their original stock.

The now venerable Charles S. Storrow, then superintendent of the Boston & Lowell Railroad, took a deep interest in it, and was for a number of years a director in the New Hampshire division.

The difficulties that the early friends of the branch railroad had to contend with will be appreciated when you take into consideration that it took them nearly eight years to build up their seventy miles of road.

The contest arising over the crossing of the Merrimack River at Haverhill and extending the line east from the river, was a vexatious and troublesome one. The citizens of Haverhill, to a certain extent, were opposed to its extension beyond Haverhill, and some desired that the road should cross the river on or near the old Merrimack River bridge, and through the centre of the town.

The engineer of the road considered this road impracticable, and reported that the only practicable one was the one where it was finally located—up the valley of Little River.

This the citizens of Haverhill considered too far away from the centre of business. The difficulty delayed the location of the road to the State line two or more years—in fact, the charter for this extension from Haverhill to the State line, three miles north of the Merrimack, was not obtained until April, 1837, two years after it was granted to Haverhill, and two years later than the chartering of the New Hampshire extension. +

it then took
name of Boston
& Portland R R

This location was a great disappointment to the people of Haverhill; so much so that one of the most prominent citizens—Colonel James H. Duncan, and a director in the corporation—resigned his position on account of it. The feeling in Haverhill was general that the best interests of the town demanded that Haverhill should be the terminus and point of supply for the country beyond.

Today Haverhill citizens would hardly wish to see the road in the location which the earlier citizens so persistently urged.

The building the road through the little town of East Kingston, N. H., was not without its vexations, though it was offset by some amusement.

The people had conceived the idea in some way that the road would be an injury to them, and they took every means in their power to retard it. They would pull up the engineer's stakes, put themselves and their teams in the way of the graders.

The writer, who was a member of the engineers' corp, well recollects noticing that the alignment of one of the curves seemed some how askew, and found the stakes had been transferred or offset to a new line. Sometimes the track would be torn up at night and the rails thrown down the bank, and it was only after a number of these men had been arrested and fined that they ceased to annoy and trouble.

Their actions in many instances, while vexatious, were very amusing. In building a railroad, and particularly in New England, there is much to be done besides excavating and moving the earth. Rock excavations and the procuring of stone for culverts and bridge abutments required the use of powder. At the time of which I am writing, the friction match, now so common, was not in existence; wood fires were kept burning along the line of the road to furnish a convenient source of fire for exploding the blasts and to light the pipes of the men at work. I remember once of walking over the line with a surveying instrument on my shoulder, and meeting an Irishman who had in one hand an open keg partly filled with blasting powder, and in the other a brand of fire which he was swinging to keep it alive, and he was as cool and unconcerned as if the powder had been so much flax-seed.

In walking over the road you would often hear an explosion—then you would have to look for and dodge the falling stones which would sometimes drop a little too near you to be pleasant.

The safety fuse, which has been used for many years, and by which you can time the blast, was not known. The way a drill-hole was charged was to put the powder in the bottom of the hole, then a tamping rod, which was somewhat longer than the depth of the pole, was put in, and broken brick, moistened, was put in and tampered down until the hole was filled, then the rod was drawn and the hole partially filed with powder; a rye straw, filled with dry sand and powder, was then inserted, the end reaching above the rock, and the balance of the hole filled with sand, then a train of powder was laid some distance away, which the man in charge would touch with a brand of fire and run. These explosions were dangerous and often attended with the saddest results; Railroad building in those days was a new art.

I do not remember (and I was in the employ of the road on the engineering most of the time from its commencement to its completion to South Berwick) of any one of its employees, with the exception of Captain Barney, that had had any experience in railroad building.

Mr. Storrow, who had, while a student of engineering in France, visited the Manchester & Liverpool Railroad, building under Stevenson, was the only person of those who built the Boston & Lowell who had ever seen a railroad.

Civil engineering was then in its infancy; there were but few technically educated men in the profession, excepting those educated at West Point. There were, however, a few civil engineers, as distinguished from military engineers, who were even then prominent, and who have left their enduring mark on the time.

There were Colonel Baldwin of Massachusetts, B. H. Latrobe of Baltimore, Colonel Charles Elliot of Philadelphia, and John B. Jervis of New York, all accomplished and eminent in their time.

There were few books relating to the professions, outside of those used in the schools, that were of any value to the engineer. Excavation and embankment tables, profile and cross-section paper, were not known. The time of the civil engineer, when not in the field, was spent mostly in working out these computations in a laborious way.

Engineering instruments were not what they are today. The transit was not in existence then, though it had a forerunner, the heavy and clumsy English Theodolite. There was also an instrument known as the goniometer, which in some respects resembles the transit, but was clumsy and inaccurate. Many railroad lines were run largely without telescopic instruments. The old-fashioned compass was freely used in preliminary and trial lines. I do not hesitate to assert that seventy-five per cent of the line of the original Boston & Maine railroad was run without a surveying instrument, ranging out the straight lines by three poles, and measuring in the curves by offsets.

Captain Joshua Barney was the first chief engineer; his first assistant was Captain (now General) George S. Green, both West Point men. They left the road soon after it was opened to Andover in 1836. General Green, who is now living at the advanced age of ninety-two, became distinguished in his profession, and was one of the men instrumental in organizing the American Society of Civil Engineers, of which he was afterwards president. He was also in the War of the Rebellion and made a brilliant record.

Professor James Hayward, who succeeded Captain Barney, had been a professor of mathematics in Harvard University, and at the time of his appointment had an office in Boston and was doing some work in engineering, but mostly preliminary. He was employed on the road most of the time afterward and until its completion into Boston, and was for some years its president.

The writer well remembers a large curve beyond Andover on which Captain Barney had designed to ease the transition from the tangent

to the main curve by a curve of large radius. This had been run in by our old goniometer on the origigal surface. After the excavation was completed and the original stakes disturbed, ~~Isaac~~ M. Spellman, afterward president of the Boston & Maine, together with the writer, tried to run out the curve again for placing the rails. We failed to master either Captain Barney's combination or the eccentricities of the goniometer, and concluded here was the place for our chief, the professor of mathematics, to test his skill. He came, looked things over, but, without consulting formula or instrument, said, "George, go to end of chain; now set that stake about three feet farther west—no, move it back a foot—drive it there. Go ahead to next." So he went over it and fudged it in by his eye. When he had got through, we youngsters got our heads together and resolved that if a Harvard professor could work that way, we could do the same, and I must confess that in after years, on railroad location, I sometimes found the professor's method a great convenience. Professor Hayward in years afterward founded the Hayward professorship of civil engineering at Massachusetts Institute of Technology.

Israel

There was another curve, a verticle curve on the old line, since abandoned, on which our good friend and professor tried his skill. Two sharply different grades met, and the chief conceived a vertical curve to unite them would be a good thing. He took the data home, figured out the grades, and Spellman and I tried hard to stake it out. There was trouble and it did not look right, so the trackmen were left to get over it as best they might. We afterwards found the curve was computed as if turned bottom up.

His assistants were all young and inexperienced men; there were two college graduates among them, but they were mostly men who received an academical education; many of them, however, in after life became more or less prominent as engineers and railroad managers.

One was the first engineer, superintendent and afterward president of the Michigan Central; another an engineer of an important road in Missouri; another, engineer of prominent roads in Ohio and Michigan; another, engineer of the Androscoggin & Kennebec (now Maine Central), and one succeeded Mr. Hayward as president.

John W. Brooks,
John T K Haywa
George T Clark
Edward Applet
Israel M Spelma

Mr. Clark was president of the road from its conception until it was completed to Dover, 1842, and up to the time the various corporations in the several States were made one. His struggle to carry the road beyond Haverhill was the principal cause that led to his retirement. Many of the citizens of that town desired to have it terminate there, and were disappointed in seeing it extended; but he saw from the beginning the greatness and value of the improvement, and was determined that nothing should prevent its becoming what it has since become, a great Eastern line. The reputation that he acquired led to his election as a director and building agent of the Androscoggin & Kennebec Railroad, now part of the Maine Central. On the completion of that road to Waterville he retired from active life.

A brief review of this somewhat remarkable man may not be uninteresting. Hobart Clark

was born in ~~Shirley~~, Mass., July 11, 1780. His father was Samuel Clark, a prominent and useful citizen of that town. His grandfather was the Rev. Peter Clark, who was the first pastor of the first church in Salem village—now Danvers—from 1717 to the time of his death in 1768, fifty-one years.

Sterling

Mr. Clark was thrown on his own resorces very early in life, but his great determination and perseverence enabled him to enter Harvard College in 1804, in his twenty-fourth year. He was there two years, when he left college to commence the study of law in the office of ~~Ashuel Stevens~~, supporting himself in the meantime by teaching. He finished his law studies in the office of the Hon. Timothy Bigelow, was admitted to the bar of Middlesex county in 1810, and opened an office in Dracut. He left there in 1811 and removed to Andover, where he soon acquired a large practice, which he retained until he commenced his railroad work. He was Senator from Essex county in 1820 and 1821, and in this capacity was one of the triers of Judge Prescott upon his impeachment, made so famous by the eloquent defence of Webster; was a justice of the Court of Sessions for many years (since abolished); also an original member of the Essex County Agricultural Society, and for many years one of its trustees, and through life an enthusiastic farmer, and greatly attached to agricultural pursuits. He was the suggester and earliest promoter of the Andover ~~branch~~, and for thirty years one of its directors. He organized and was for many years the president of the Merrimac Mutual Fire Insurance Company; was first president of the Boston & Maine Railroad; director and building agent of the Androscoggin & Kennebec Railroad; in 1853 he was appointed postmaster of Andover by Franklin Pierce, and retained the office to the close of Buchanan's administration; he was then in his eighty-second year. He died in August, 1870, at the age of ninety years.

Asahel Stearns
afterwards Prof.
Law in
Cambridge

Bank

A contemporary of Mr. Clark, in an obituary notice of him at the time of his death, says:

Hon N W Hazen
[illegible]
Aug 13 1870

The moral courage and independence of Mr. Clark may be inferred from the fact that he was an original supporter of Andrew Jackson for President of the United States. Traits like these subjected his character and conduct at all times to severe scrutiny, and they bore the ordeal without a st~~r~~ain. The services that he rendered to the public were out of all proportion beyond the advantages that he secured from them to himself. The convictions of Mr. Clark were clear and decided, and he never hesitated to follow where they led. Such is a brief review of the man, and such the outline of a long life; there are few with means no larger have accomplished so much, and there are none who, relying so little upon conciliation as he did, have been so much beloved.

Stain

Memorial Hall at Andover contains a very life-like portrait of Mr. Clark when in his sixty-ninth year, painted by Willard, forty-three years ago.

G. T. C.

Written by My Father, Hon Hobart Clark
who died at Andover, Massachusetts
– August 3rd, 1870. [illegible]

FIRST REPORT

OF THE

DIRECTORS

OF THE

ANDOVER AND WILMINGTON

RAIL ROAD CORPORATION,

WITH THAT OF

THE ENGINEER.

OCT. 21, 1834.

ANDOVER:
GOULD AND NEWMAN......PRINTERS.
1834.

REPORT.

To the Stockholders of the Andover and Wilmington Rail Road Corporation.

GENTLEMEN:

It having been considered inexpedient to make a formal report previous to the last annual meeting, the present Board of Directors have now the honor to present to you a statement, somewhat in detail, of the proceedings of the Directors from the first organization of the Corporation, which was in June, A. D. 1833.

The first measure of importance taken by your Directors was to procure an Engineer to make such surveys and estimates as were necessary, to enable the subscribers to the stock to decide on the practicability and expediency of the undertaking.

In selecting an Engineer, it was an object to obtain a gentleman of experience and of high professional attainments, whose report would be entitled to your full confidence. This was found to be a more difficult task than was at first apprehended—Engineers being at this time much engaged in similar projects.

Patrick T. Jackson, Esq., the Agent for the Lowell Rail Road, who had on many occasions aided your Directors by his friendly advice, recommended Col. Loammi Baldwin for this service. It was thought important to obtain this Gentleman, so celebrated in this and other states, as a civil Engineer.

Col. Baldwin was applied to in August, and he agreed to assist us as far as he could, consistently with his duties to the government, and previous engagements to other individuals. He came and viewed the several proposed routes, and on the fifth of September, he commenced the surveys, accompanied by four young gentlemen under his tuition, and with other necessary aid furnished him by your Directors. Col. Baldwin superintended the work the two first days, and then left it in charge of Mr. Pratt, his most experienced Engineer.

The first line was commenced at the Bridge over the Lowell Rail Road, near Col. Jaques' store in Wilmington, thence following the Andover Road, as far as Richardson's house, near Wilmington Meetinghouse; thence bearing westerly, and passing the west side of said Meetinghouse; thence northerly over the low ground and Lubber Brook to the Salem and Tewksbury Road, about forty rods to the west of the house of William Blanchard, Esq.; thence crossing said Road and continuing the same direction over said Blanchard's farm and the Harnden farm, to the west Andover and Wilmington Road, near Thomson's house; thence crossing said Road and continuing about the same direction and on the easterly side of said Road, leaving Thomson's house about twenty rods to the west; then bearing a little to the west, and crossing said Road again, and passing over the farm of William Burt about four rods westerly of Burt's house; thence to the valley of Chandler's Brook (or Foster's Pond Brook) then bearing easterly on the side of the hill near the line between Andover and Wilmington, to the Meadow on said Brook; thence over said Meadow, crossing said Brook about forty rods westerly of the Chandler's bridge, and so about the same direction over Mears' Plain to the head of said Plain, near the house of Isaac Goldsmith, Jr.; thence crossing the old Boston and Haverhill Road, and bearing more northerly over land of Nehemiah Abbot and land of Ezra Abbot and others, nearly parallel to the general course of said road, to a point in the Road behind Mr. Locke's Tavern, near the house of Peter French. The length of this line is $7\frac{80}{100}$

miles. Rise from Lowell Rail Road at Jaques' Bridge, 71 $\frac{37}{100}$ feet. This is called the Western Route.

The other line run by Mr. Pratt commenced at the Bridge over the Lowell Rail Road on the east Boston and Haverhill Road, about one mile lower down on the Lowell Rail Road than Jaques' Bridge; thence a little to the east of north on the easterly side of the valley of maple meadow Brook, about one and a half miles, where the line crosses said Brook; thence near the same course about one half a mile, to Lubber Brook; thence crossing said Brook in the same course, about three fourths of a mile, to the last mentioned road; thence crossing said Road, and bearing a little more easterly, and passing about three rods easterly of Gowen's buildings, so on about five eighths of a mile to the Salem and Tewksbury Road, about fifty rods to the east of the house of Doctor Brown. Thence nearly a straigth line, about one mile and three fourths, following the general direction of the Boston and Haverhill Road, and a few rods easterly of it, to the Low Ground between Foster's Pond and said Road; thence more westerly, following the course of said Road, and keeping on the high ground near the same, about one fourth of a mile; thence taking a more easterly direction, about three eighths of a mile, to a mill dam on the brook, the outlet of Foster's Pond; thence more northerly, near a straight line, about seven eighths of a mile, to the Road near Capt. Job Abbot's house; thence still more northerly and a little to the west of north, about three fourths of a mile, passing near Capt. J. Hayward's buildings, to station numbered 116, and the letter D on the Plan of the West route; and this is called the East Route.

Mr. Pratt completed a plan of these two routes and profiles of the same, under the Direction of Col. Baldwin; and when he had got thus far, he was obliged to accompany Col. Baldwin to Norfolk, on business of the government.

These plans are herewith exhibited, and may be seen at any time by calling on the Directors.

Col. Baldwin has expressed an opinion of these routes in a letter dated Oct. 10, 1833, as follows—

T. Willis Pratt
[illegible] Chief [illegible] of
[illegible] Survey

Charlestown, Oct. 10, 1833.

DEAR SIR,

I regret that my engagements require my going to Norfolk before more extensive views and surveys for the Branch Rail Road from Wilmington to Andover can be made. Mr. Pratt, who has made the surveys under my direction, must also accompany me to Norfolk, on business of the Docks; but he will be able so far to complete his plan and profile of the surveys of what are called the Western and Eastern routes, before he goes, as to enable you and other members of the Board of Directors to understand the nature of the lines already surveyed, and to judge how far more favorable ground can be found for future trials.

From the view I have taken, in company with you and other gentlemen interested in the inquiry, and from having personally attended two days in the commencement of the survey, I have no doubt, a highly favorable route for the contemplated road may be found, and even much more so than, on my first view, I had supposed.

The whole distance on the first line surveyed, from the Lowell road, by Jaques' Bridge in Wilmington, marked A on the plan, to a point in the road behind Locke's Tavern in Andover, marked B, is 7·80 miles, and the rise 71·37 feet. This is called the Western Route.

On what is called the Eastern route, the point of the Lowell road from which the survey was commenced, is at the Bridge on the East Boston road in Wilmington, marked C, and falls into the Western line at station 116, marked D, in a distance 7·52 miles, rising 64·10 feet, and from this last point to the end of the Western route at B, the distance is 1·11 miles and the rise is 17·98 feet, thus making the whole of the Eastern route, embracing the upper part of the Western route, 8·63 miles, and the rise 82·08 feet. This additional length and rise of the East route is principally owing to its beginning about a mile lower down on the Lowell road at a point about 10 feet lower than at Jaques'.

The first work I ever did in the way of Engineering was to carry the Instrument on this survey. when I was 15 years of age in ~~October~~ ~~August~~ 1833 Geo. T. Clark — (Col Baldwin was on the line two days. I remember him very well ~~he~~ [illegible] large and ~~[illegible]~~ ~~[illegible]~~ My Father was along with them. GTC

The first survey was begun at Jaques', as an arbitrary point for a trial survey only, and was never considered as the most eligible route. Indeed the lower part of this route is too low, and will not be adopted. But I have no doubt, that pursuing the general course of the Eastern line as far as, or to the neighbourhood of a point marked E, then crossing over more favorable ground, perhaps a little East of Mr. Blanchard's, into the line of the Western route in the neighbourhood of F, much more eligible, and indeed highly favorable ground may be found, and from F pursue the general course of the remainder of the Western route to Andover.

Upon the whole, the appearances and character of the country over which this Rail Road is contemplated, are very favorable to the project. There are but two points on the line which I consider embarrassments, and these are the two vallies at Chandler's brook, and at Goldsmith's house. But a more favorable direction for crossing Chandler's brook may be obtained than is seen on the plan and profile, while the line at Goldsmith's valley is seen on the plan, perhaps as favorably as one can be chosen. Here the breadth is about 50 rods at 43 feet above the bottom, where it is very narrow. At both places abundant earth for embankment is convenient.

In other respects no expensive works of art are required. No great streams are to be passed; apparently no expensive ledges to be opened; no costly bridges will be required; and all the roads may be passed with facility. There is a sufficient quantity of rock for all requisite purposes near the line of the road, and there is no deep boggy meadow land on the route.

Should you have occasion to address me further on the subject, please to direct to me at *Norfolk, Virginia*, and your letters shall be cheerfully attented to.

With great regard,
Yours truly,
L. BALDWIN.

To Hobart Clark, Esq.
Andover.

Your Directors were now fully satisfied of the practicability of locating a Rail Road from the Lowell Rail Road in Wilmington, to Andover, on a line nearly straight, and which should be more level than perhaps any Rail Road hitherto projected in our country, of equal length; the Lowell Road only excepted.

An accurate calculation of the expense of building this Road was the next object of inquiry for your Directors. To make this calculation, a skilful and experienced Engineer was indispensably necessary. Your Directors were so fortunate, as to be able to engage Mr. Joshua Barney, an Engineer well qualified and of much experience in this branch of his profession, to perform this service. Mr. Barney came to Andover, and commenced the business on the twelfth day of November last. He examined our plan, viewed both routes, and then began his line at a station in front of Dr. Wardwell's house, on the road between the station near Peter French's house and Andover South Parish Meetinghouse; thence following the general course of the West route, diverging a little to the right and left of it, as the land was found most favorable, but on the whole making this line about as straight as that of the West route, as far as letter F on that route; then taking a more southerly direction, but crossing the Salem and Tewksbury road a few roads westerly of Esq. Blanchard's house; thence over Lubber Brook, and crossing the west Boston and Haverhill Road between the Lubber Brook Bridge and Wilmington Meetinghouse, so on in a straight line passing a few rods to the east of Col. Blanchard's house, and intersecting the Lowell Rail Road about six hundred feet below the Bridge at Col. Jaques'.

Mr. Barney reported to your Directors his plan, calculations and estimates, about the twentieth of January last, all which is herewith exhibited for your inspection.

Also a Lithographic map of the route on a reduced scale is hereto annexed.

It will be seen from the Engineer's report, that calculations have been made to construct this Road in different ways, with double and single tracks, with trench walls or rubble stone, and with longitudinal sills. It is thought that one set of tracks, with one or more Turnouts, will be sufficient, provided locomotive power is used, which is now considered the cheapest and most expeditious mode of propelling Cars on Rail Roads.

But as it is believed that this is to be the first section from the Lowell Rail Road of a Rail Road to be extended over Merrimac River to Haverhill, and so on through Newhampshire to Maine, it would be best in moving the earth to form the Road bed, to have reference to another set of tracks, to be laid at a future period, so far as can be done with convenience, and without additional expense.

A Road formed for a single track, with Iron rails placed on wood sleepers, and longitudinal sills, is calculated at the sum of $77,002 20, exclusive of expense of Engineers and other contingencies. Your Directors are of opinion that a Road built in this form would answer the purpose well, and have some advantages over a Road built with a more expensive superstructure. No calculations have yet been made as to the amount required to be paid in damages for land and fences.

It is believed that these expenses must be comparatively small. The country through which the Road will pass is almost entirely agricultural. The farms are large. A considerable proportion of the land is not under improvement except for the growth of wood, and some of it of small value. There are, however, many good Farms on each of the several Routes, which have been examined. And your Directors have reason to expect a liberal release of damage from some of the Farmers on the routes, provided they are accommodated in the location of the road.

It must be apparent to every one acquainted with the routes, that the location of the Road may be varied in many places with perfect convenience, in view of this object.

It may be asked why the report of the doings of the Directors has not been laid before the Stockholders at an earlier period.

The answer to this question is, that in January last, when the annexed report was completed, there was great derangement in the money market, and stocks in general were much depressed. And considering that this stock had been subscribed for conditionally: it was thought most judicious by your Directors, and such subscribers to the stock, as they had opportunity of consulting, to delay this report, until business should assume in some measure its former prosperous condition.

The act of incorporation required the location of the Road to be filed with the proper authorities before the first day of June last. Recent acts of the commonwealth rendered it of the utmost importance that this act should be continued in force; accordingly application was made to the Legislature near the close of their last Session, and an additional act obtained extending the time of filing the location of their Road for the term of six months.

Your Directors will now proceed to exhibit their views of the probable income of the Road. The Lowell Rail Road diverges very much to the east of a direct line from Boston to Lowell, and in the northerly part of Woburn and southerly part of Wilmington it passes considerably to the east of the Boston and Haverhill Road. So that the Andover and Wilmington Rail Road will intersect it soon after it begins to take a more westerly direction, thereby forming a very direct Rail Road from Boston to Andover, of about twenty two miles in length. And it is believed that no route could have been located from the city of Boston more favorably to take the travel from the state of Maine and the easterly part of Newhampshire, than this.

The enterprising citizens of Haverhill are about getting a new Road opened from their town to Exeter, which shortens the distance between the two towns more than three miles and a half. It is understood that the upper Road from Portland to Boston, will then be about the same length as the lower Road from Portland to Boston through Newburyport, as it is usually travelled. It is also understood that the Road from Augusta through Gray to Dover is fifteen miles shorter than the Road through Portland. This would also have a tendency to divert the travel coming from, and below the Capital of the state of Maine to the upper Road, through Haverhill.

There are sixteen stages daily, as we are informed, which pass between Newburyport and Boston. They are supposed to average ten passengers to a stage, making the number of 50,080 annually. Newburyport is twenty one miles from Andover, and it is probable that a Rail Road might be constructed from Andover down the Merrimac River to Newburyport, in about the same distance; which would make the distance from Newburyport to Boston by Rail Roads about forty three miles, which would be about six or seven miles only farther than the stage Road.

Your Directors having shewn what amount of travel may pass on this Rail Road from other and distant places; they now proceed to show you the amount of travel that will without doubt pass on it as soon as it is opened.—In doing this they state the number of stage passengers that have passed from and through this place to and from Boston, from Oct. 1, 1833 to Oct. 1, 1834.

In the Andover stage, exclusive of the way passengers, as per Way-bills	4,158
In the Haverhill company stages during the same time, as also appears from their Way-bills . . .	8,706
The Derry stage, which is only one a day, but was formerly two, and is to be two again soon, as is understood, is estimated at nine per day, making during the same period the number of . .	2,817
Total number of stage passengers	15,681

The stage fare has usually been one dollar each way. Suppose the fare on the Rail Road to be seventy five cents, then this number of 15,681 passengers would amount to the sum of $11,760 75.

The next item to be considered is the amount of Toll to be paid to the Boston and Lowell Rail Road Corporation, for running Cars over their Road.

Your Directors have no means of stating what this may be.

They have been informed from good authority, that the usual sum paid is about one cent per mile for each Passenger, and one half cent per mile per Ton for Goods. This item may be more, and it may be less. But from what is known of the liberal views of the officers of that Corporation, there is no reason to expect that an unreasonable sum will be required. They will undoubtedly consider it for their interest to encourage this branch to their Road.

The Tonnage which passes through and from this place to and from Boston, conveyed in the Baggage waggons which run regularly from Haverhill, Andover and Methuen, with some few other teams which go occasionally, has been estimated by consulting the owners of the waggons, some of their employers, and others who have means of judging of the amount conveyed, and is believed by your Directors not to have been overrated. It stands as follows—

From Andover	2,900 Tons
" Methuen	1,500 "
" Haverhill	1,300 "
Total	5,700 Tons

This at four dollars per Ton, which is the usual price from this Town, amounts to	$22,800 00
Fifteen thousand six hundred and eighty-one stage Passengers, at one dollar each, is	15,681 00
Total amount paid from Oct. 1, 1833 to Oct. 1, 1834 for the transportation of goods, principally on Baggage waggons and for persons in the publick stages, is	$38,481 00
For the purpose of this calculation the Tonnage on the Rail Road is reduced to two dollars per Ton, which amounts to the sum of	11,400 00
The fare for Passengers is calculated at seventy five cents, which amounts to the sum of	11,760 75
Total	$23,160 75

Toll to be paid to the Boston and Lowell Rail Road Corporation, at one half cent per Ton per mile, say fourteen miles, is	399 00
Toll to be paid as above for Passengers at one cent per mile each, say fourteen miles, is	2,195 34
Whole amount of Toll for the above number of Tons of goods and the number of Passengers as above, is	$2,594 34

This last mentioned sum subtracted from twenty three thousand one hundred and sixty dollars and seventy-five cents, leaves, to meet all the annual expenses of the Road, the sum of . . $20,566 41

Your Directors have not been able to obtain, either from the Officers of the Providence or the Worcester Rail Road Corporation, the actual daily expense of running their locomotive Engines on either of their Roads. They have been, however, obligingly favored by the Officers of both these Corporations, with much information in regard to the Construction of their Roads, and also with several reports of their Directors and Engineers. At the close of one of these reports in a statement made by Mr. Henshaw is found an extract from a Report of the Baltimore and Ohio Rail Road Company, from which it is understood an experiment was made on that Road of substituting steam for horse power in the transportation of merchandize, and that the result was very successful—making a saving of more than one half—that this Engine performed its distance of eighty miles per day, drawing five Cars, weighing, loaded, eighteen Tons, at an average speed of twelve miles an hour; though it might have been driven at a greater speed.

The cost of Running this Engine is quoted as follows:

The daily cost of running the Engine to the planes will at the present high price of fuel probably be $16, made out as follows:

Engineer	$2 00
Assistant	1 50

One Ton of Anthracite Coal	8 00
Oil	0 50
Repairs and Renewals	2 50
Interest	0 75
Contingencies	0 75
Total	16 00

For the purpose of this calculation your Directors have assumed this sum as the expense of two trips to Boston a day, with an Engine drawing all the necessary Cars for Goods and Passengers, making a distance of between eighty and ninety miles each day, at a speed of about twenty miles the hour, which amounts to the sum of	$4,008 00
The interest on one hundred thousand dollars, is	6,000 00
Salaries, labor &c. of Superintendant, Clerk, Warehouse men &c. is supposed may amount to the sum of	4,000 00
Repairs of the Road	2,000 00
For other contingencies	1,000 00
Amounting to the sum of	$17,008 00
Which sum, subtracted from the above sum of twenty thousand five hundred and sixty-six dollars and forty-one cents, leaves, after paying all expenses and six per cent on the capital, the sum of	3,556 41

Your Directors may have set some of these items of expense too high ; perhaps others too low. Their means of obtaining information on this subject, has necessarily been somewhat limited. But should this project turn out to be more expensive than has been here calculated, there are no reasons why it should be abandoned, as only a part of the travel which will pass over this Rail Road has been brought into the calculation. Andover, Haverhill, Methuen, and Bradford are all flourishing agricultural and manufacturing towns. Farmers transport most of their produce, and munufacturers many of their commodities in their own vehicles. Men of business often travel in their own carriages, and much travel must also come from other places more distant.

That Rail Roads are to be established between all considerable places in our country where the amount of business will justify the expense, is no longer an open question; experience has already settled it. So pleasant, cheap, easy and expeditious is this mode of conveyance, that it has preference over any other now in practice. This is proved by the fact, that the increase of travel between places where Rail Roads have been opened, has been very great.

The travel between Manchester and Liverpool is said to have increased *seven fold* since the construction of the Rail Way. The opening of the Baltimore and Ohio Rail Road increased the travel on that Route *ten fold;* and that was said to be about the usual increase of travel where other Rail Roads had been opened in that section of the country. The officers of the last mentioned Corporation in their late annual report say, "Under all these circumstances, speculation is no longer necessary. Facts now stand in the place of opinions—results in place of calculations. And upon a full and careful examination, the Board feel no hesitation in assuring the Stockholders that the completion of the work to its termination on the Ohio, upon the plan first contemplated, with a double track of Rails, is perfectly practicable within the original estimate of twenty thousand dollars per mile, excluding, in the average, the greater outlay upon the first division of the Road, and this too without the sacrifice to economy of any one requisite of durability and excellence."

"The adaptation of the Rail Road system to general traffic—that point so long disputed—has been fully and for ever set a rest. Every species of agricultural productions, lime, timber, lumber, fire wood, even paving stones, have been brought to Baltimore, with profit to those using the Road as a means of transportation for articles so bulky and so cheap; and in return, and at an enhanced toll, but with equally profitable results, plaster of Paris, coal, boards, bricks, and scrap iron, have been sent into the interior. When articles so varied, and some of them of so small value, can be carried profitably to their owners, and to the Company, no doubt can exist as to the profits arising to both, on Merchandize and Passengers."

In conclusion, your Directors observe, if you persevere, and finish this Road, the property in this vicinity will be greatly enhanced in value. If you fail to do it, it will be greatly diminished. You cannot stand still—you will either advance towards the Capital, or you will recede. In the one case, you are within a few miles of Boston—in the other, the counties of Middlesex, Worcester, Norfolk, Bristol, and even the State of Rhode Island, are nearer the Capital than you.

All these facts, your Directors think of importance; and they trust that you will adopt that course which will best promote your own interest and the public good.

All which is respectfully submitted.

HOBART CLARK, Died Aug 3 1870
ABRAHAM MARLAND,
AMOS ABBOTT,
JOHN SMITH,
MERRIL PETTENGILL.

Andover, Oct. 21, 1834.

i.e. track from Wilmington to the Merrimack River. Bradford was laid by Onslow [illegible] Stearns afterwards a prominent R R road man and Governor of New Hampshire ~~who~~ Died at Concord N H in 1878
GTC

[illegible]

Chief Engineer Office Geo. T. Clark Chief Engr
Toledo & Ann Arbor R.R.

Ann Arbor Mich
1879

This road was opened to Andover Aug 6th 1836. The depot was near the Memorial hall, I was employed on the road at the time as assist Engineer Lieut Geo. S Greene, (now General) was principal assistant. Capt. ~~James~~ Joshua Barney was chief. Engineer Prof. James Hayward of Cambridge was employed in the place of Barney in 1837, and was on the road to its completion. Geo. T Clark

G J Clark

25

BOSTON, JANUARY 14, 1834.

To HOBART CLARK, ESQ.
President of the Andover and Wilmington Rail Road Co.

SIR: Having in compliance with your request undertaken the execution of the survey of a route for a Rail Road from Andover, to intersect the Boston and Lowell Rail Road—for the purpose of ascertaining approximately the probable cost of its construction, and the amount of capital required to put it in operation, I have now the honor to submit to you the following, as the result of those surveys, accompanied with a Map illustrative thereof.

The advanced state of the season in which the survey was commenced, and the necessity for despatch in operations in the field, precluded the possibility of making the proper examinations of the country to ensure the most judicious selection of the ground for the experimental line on which the estimate was to be based.

I think it necessary therefore to premise (and from the cursory examination I made of the intermediate country) I have no hesitation in saying that a Road might be located between Andover and the Lowell Rail Road, which in its construction would not cost within 8 or 10 per ct. of the amount herein estimated.

By reference to the map and profile, it will be perceived, that on the route surveyed, the valley of the small run near Goldsmith's house, and that of Chandler's Brook, present the greatest obstacles to an easy graduation of the Road, and in fact form the only barriers on the entire route to the formation of a road bed at the minimum expense of graduation.

For the purpose of diminishing the quantity of embankment over the valley near Goldsmith's, an experimental survey was made which is represented by the dotted line on the map, and it is my opinion that the development of surveys preparatory to a location, will enable a crossing of this valley to be made without making the route more tortuous than the most direct line run, or more expensive than the other ; my estimate therefore will be based on this supposition. It will appear evident also from an examination of the topographical features of the country, that the expense may be considerably diminished at the crossing of the valley of Chandler's Brook, though here it will be indispensably necessary to make the road circuitous, to avoid the hill bordering the valley on the south side, through which it would be necessary to excavate to pursue a more direct route. The road, with the exception of this instance, which by no means presents a serious exception to its general character, may be considered unusually straight, and even in this case the curvature will not be so great as to render it necessary to retard the velocity of an engine operating with a proper rate of speed on a straight line.

The excavations necessary for the graduation of the Road bed, are generally of a loose nature, composed principally of gravel, sand and small stone, though in some instances considerable portions of rock will be encountered ; this however is of a nature so well adapted to the different purposes of construction (consisting as it does of sienite and granite, and affording the best material for abutments of bridges, trench walls, and other purposes,) that rather than an obstacle, we may consider it a favorable circumstance.

The crossing of two or three swamps will be unavoidable on this route, which on a superficial view might be considered obstacles of a serious nature ; but there is nothing in their character or extent to make it expedient to place other than embankments of the most simple kind over them, and those seldom of an elevation more than sufficient to protect the road from the effects of inundations which occur in the spring and fall.

As you desired, I have estimated for the formation of a Road bed of sufficient width for the laying of two tracks of Rails : yet I cannot conceive it possible that it will be found expedient at any time to lay more than one ; for it appears evident to me that on a road of this extent, the business could and should be so regulated, that one track with the necessary passing places, should fulfil every purpose for which the road is intended. I have therefore annexed an estimate also for a single track, by which it will be perceived that a considerable amount may be saved in the first investment.

I furnish you with estimates of the cost of laying rails on a foundation of rubble stone, or trench walls; as adopted on the Boston and Providence Rail Road where it has been considered necessary to secure against the action of frost. And one with a superstructure formed of longitudinal sills, which (from the peculiar nature of the excavations and embankments, and the probability of their being but little affected by frost) I am of opinion would answer on almost the entire route, as a substitute for the more expensive foundations of rubble stone, or trench walls, and from the facilities afforded for the readjustment of the rails, should they by settling of embankments or any accidental circumstance be deranged, may be preferred. The rails in either case to be secured and kept in position by transverse cedar sleepers, placed about 3 feet 9 inches apart, and notched for their reception, and to be made fast to each sleeper by strong iron spikes. The Rail in shape, similar to that used on the Boston and Providence rail Road, but lighter.

It was found necessary in order to make the most economical distribution of the excavation and embankment at Chandler's Brook, to have an ascent of about 14 feet in the grade of the road in going from Andover towards Boston, which is overcome in about a mile; with this exception the grades have an inclination from Andover, and vary from 1·2 to 25 feet per mile. The first grade (or stage,) descending 14 feet per mile, is 1½ miles in length. The 2d, descending 23·6 feet per m., 1 mile 320 feet in length. 3d, ascending 14·7 feet per m., 4480 feet in length. 4th, level, 3120 in length. 5th, descending 25 feet per m., 1 mile. 6th, descending 6·66 feet per m., ¾ of a mile. 7th, descending 2·33 feet per m., 1½ miles. 8th, descending 1·20 feet per m., one mile.

The total length of the Road is 8 miles, 1500 feet.

The total ascent and descent 93·45 feet.

To render the computations of the expense of graduation more clear and easy, I have divided the route into eight sections, in which the excavations and embankments are as near as the case will admit equalized, and have in the estimate only calculated for the expense of excavating or embanking according to the preponderance of either; making a due allowance in the price for the proportion of rock that may occur.

ESTIMATE OF GRADUATION AND MASONRY.

Section 1st.

9,050 cub. yds. of Embankment at 14 cts.	$1,267 00
Masonry for culverts and drains	60 00

Section 2d.

55,787 cub. yds. of Embankment at 17 cts.	$9,483 79
Masonry for culverts and drains	210 00
One Road bridge	600 00

Section 3d.

109,817 cub. yds. of Embankment at 17 cts.	$18,668 89
Masonry for Bridge over Chandler's Brook	1,000 00

Section 4th.

35,201 cub. yds. of Excavation at 14 cts.	$4,928 14
Masonry for culverts, &c.	200 00

Section 5th.

19,187 cub. yds. of Excavation at 16 cts.	$3,069 92
Masonry for culverts	45 00

Section 6th.

10,553 cub. yds. of Embankment at 16 cts.	$1,688 48
4376 cub. yds. of Excavation at 14 cts.	612 64
Bridges and culverts	500 00

Section 7th.

8,650 cub. yds. of Excavation at 17 cts.	$1,470 50
648 do. do. at 12 cts.	77 76
Masonry for culverts	75 00

Section 8th.

16,288 cub. yds. of Embankment at 17 cts.	$2,768 86
994 do. do. at 12 cts.	119 22
4,246 do. do. at 15 cts.	639 00
Bridge and culverts	175 00
Total for Excavation, Embankment and Masonry . .	$47,659 80
For clearing, grubbing, and side drains	2,000 00

ESTIMATE PER MILE, FOR LAYING ONE TRACK OF RAILS, ON FOUNDATION OF RUBBLE STONE OR TRENCH WALLS.

70·7 tons of iron edge rail at $45	$3,181 50
Iron spikes, 3,170 lbs. at 7 cts.	221 90
1,410 cedar sleepers at 20 cts.	282 00
Excavating trenches and filling the same with rubble stone or trench walls	1,440 00
Dressing and adjusting sleepers	320 00
Straightening, jointing and laying iron rails	320 00
Total . . .	$5,725 40
Total for 8½ miles of Rail way . .	$48,665 90
To which add for necessary passing places	1,500 00

Estimate per mile for Laying one track of Rails on longitudinal sills.

70·7 tons of iron edge rail at $45	$3,181	50
Iron spikes 3,170 lbs. at 7 cts.	221	90
1,410 cedar sleepers at 20 cts.	282	00
10,560 feet of timber for sills at 4 cts.	422	40
Excavating trenches	240	00
Dressing and adjusting sleepers	320	00
Straightening, jointing and laying rails	320	00
Total . . .	$4,987	80

Total for 8½ miles of rail way	$42,396	30
For necessary passing places	1,500	00

Aggregate Cost of graduation and masonry for a double track of Rails, and laying of one track on foundation of Rubble stone or Wall	$99,825	20
Engineer and Agent's department and Contingencies	10,000	00
Total Cost . . .	$109,825	20

Aggregate of graduation and masonry for a single track, and laying one track of Rails on foundation of Rubble stone or Wall	$83,271	90
Engineer and Agent's department and Contingencies	10,000	00
Total Cost . . .	$93,271	90

Aggregate of graduation and masonry for a single track, with a single track of Rails laid on longitudinal sills	$77,002	80
Engineer and Agent's department and Contingencies	10,000	00
Total Cost . . .	$87,002	80

For two locomotive Engines, and the requisite number of passenger and freight cars, an expenditure of about twenty thousand dollars would be required, and I have no doubt that a capital of *One hundred*, or *One hundred and ten thousand dollars* will be found fully adequate to put the road in successful operation.

I have the honour to be,

Very respectfully, Sir,

Your obedient servant,

JOSHUA BARNEY.

Previously a Capt. in U S Army

He went to the [illegible] on account of [illegible] in [illegible] in 18[illegible] [illegible] employed by a [illegible] by the Government [illegible]

[illegible]

CONDITIONS OF THE SUBSCRIPTION

TO THE STOCK IN THE

ANDOVER AND WILMINGTON RAIL ROAD CORPORATION.

WHEREAS an Act has been passed by the Legislature of Massachusetts in corporating Mark Newman and others with their associates, by the name and style of the Andover and Wilmington Rail Road Corporation, in which it is provided the capital stock of said Corporation shall consist of one thousand shares, on which no assessment shall be laid of a greater amount in the whole than one hundred dollars per share:

And whereas it is deemed important that the Corporation be organized forthwith, for the purpose of proceeding immediately to make and complete such surveys and estimates as may show the practicability and probable expense of the undertaking; and whereas it is deemed expedient that these surveys and estimates be had and reports thereon made before any assessment shall be made on the shares, except what shall be necessary to defray the expense of such surveys and estimates—

Therefore we the subscribers do hereby agree to take the number of shares placed against our names respectively; but on the following conditions, to wit.

First, An assessment shall be laid of one dollar per share, and the funds so raised shall be at the disposal of the Directors, for the purpose of making surveys and estimates, and obtaining all such information in regard to the construction and probable income of the road, as may be deemed necessary to enable the stockholders to decide on the expediency of the undertaking.

Secondly, The Directors shall, as soon as may be, lay before the Stockholders the result of their doings at a meeting of the Corporation convened for that purpose, and duly notified in one newspaper published in Boston, and one in Haverhill, at which meeting, or within thirty days thereafter, any subscriber may, on giving notice in writing to the Treasurer or Clerk, abandon the whole or any part of his stock to the Corporation; whereupon he shall not be liable for any further assessment on the shares so relinquished; but if the Corporation shall determine to proceed in constructing the road, and said shares shall be subscribed for by others, he shall be entitled to receive back the whole amount of the assessment paid thereon; and if otherwise, to receive his proportion of any balance that may remain in the Treasurer's hands after the payment of all just claims on the Corporation.

The foregoing provisions shall be considered as original conditions, and fundamental by-laws, binding on the Directors, and all the Proprietors, and unrepealable; and shall be passed in the form of votes, if that be hereafter thought necessary or proper.

Andover, May 28, 1833.

Dea Newman was the first and the largest subscriber to the Stock at $ 5000.

A

BRIEF STATEMENT OF FACTS

IN RELATION TO THE

ANDOVER AND HAVERHILL RAIL ROAD. *

The first Charter, extending from the Boston and Lowell Rail Road to Andover, is dated March, 1833. The second, for a rail road from Andover to the central village in Haverhill, was granted in April, 1835; and in June, 1835, many of the stockholders in this corporation, in connection with gentlemen in New Hampshire, obtained from the Legislature of that State, a charter for a rail road from the line of Massachusetts at Haverhill, through the State of New Hampshire, to the line of Maine, with the view of securing to the Andover and Haverhill Road the travel to and from that section of country. This division of the great line of road is called the Boston and Maine Rail Road. In the winter of 1836, the friends of this line of road received from the Legislature of Maine, a grant for a rail road from the proposed termination of the Boston and Maine Rail Road to Portland, the business capital of that growing State,—thus completing a series of grants for an entire line of rail

* Written by Hobart Clark in 1839, for distribution among the stockholders. So says his son, Geo. T. Clark. (June 29, 1894. C.C.C.)

road (with the exception of about three miles in Haverhill) from Boston to Portland, prior to similar grants for rail roads, along the seaboard, to accommodate the same general line of travel. The application for a charter for the short piece of road in Haverhill necessary to complete the line, was postponed for the purpose of ascertaining the best place for crossing Merrimack River, and the point on the line of the State to which it would be most convenient to bring the New Hampshire division of the road. A charter for this section was obtained in April, 1837. [illegible]

The country is remarkably favorable on this line for a rail road, both as it respects the directness or freedom from curves, and the grades, which are remarkably gentle. This road passes ten or twelve miles from the seaboard, has no ferries, and crosses no navigable waters after leaving Boston.

The Andover and Haverhill Rail Road is connected with the Boston and Lowell Rail Road in Wilmington, fifteen miles from Boston. It is completed from that point to the Merrimack river at Haverhill. Its character as a structure is not inferior to any rail road in the State, with the exception of the Boston and Lowell Rail Road.

The first section of the Boston and Maine Rail Road, viz. from the line of Massachusetts to Exeter, New Hampshire, is expected to be opened for use in the autumn of the present year. Seven or eight miles of the grading is finished, much of the masonry is completed, and the remainder under

[illegible]

GTC

contract. Twelve hundred tons of iron rails have been ordered from England, of the same pattern with those ordered for the Western Rail Road.

To connect the Andover and Haverhill Rail Road with the Boston and Maine Rail Road, a bridge of between 800 and 900 feet in length is to be erected over Merrimack River, and three and a half miles of road must be constructed between the present termination of the Andover and Haverhill Road, and the line of the State. This, together with the first division of the Boston and Maine Rail Road, about to be opened, gives a continuous line of rail road from Boston nearly half way to Portland.

[illegible]

The Andover and Haverhill Rail Road has cost $400,000; including engines, cars, depôt buildings, &c. The stock—which is all paid in—amounts to $275,000. The State has loaned the Corporation $100,000; and they are in debt for the remaining $25,000.

[illegible]

The estimated cost of building a bridge over the Merrimack and completing the road to the line is $100,000.

Without the aid of the State, new stock must be created to defray this expense. There are about 300 stockholders, a great proportion of whom are original subscribers.

The subscription to this stock was mostly obtained in the towns through which the road is constructed, not as an investment but to promote the interests of those towns.

The stockholders are generally men in active business but of moderate property.

This road was commenced June, 1835; opened to Andover, August, 1836. To Merrimack River, October, 1837.

Before the granting of the charter for another road to the east, this corporation had expended on this road, $75,000.

Receipts of the road for six months, ending Dec. 31, 1838, were $34,026 71—expenses for same time, including toll to Lowell Road, 20,827 49.

Net income for same time, $13,199 22.

The whole number of passengers carried in stages between Andover and Boston as ascertained by way bills in 1834, was 7,840.

The number by Rail Road in six months, ending Dec. 31, 1838, between the same places, was 23,806.

The amount of receipts for passengers over Rail Road for four months, ending with Feb. 1838, was	$10,638 87
For freight for the same time	2,285 00
	$12,923 87
The amount of receipts for passengers over same length of road for four months, ending with Feb. 1839, was	$12,897 09
For freight same time was	5,364 50
	$18,261 59

' is but to connect the Lowell and Worcester Rai Roads in or near the city of Boston, and there will be a continuous line to the east and west and to the north as far as Rail Roads may be extended, with which these roads are or may be connected.

Written in the interest of the Boston
& Lowell Rail Road by [illegible]
[illegible]

THE

BOSTON AND MAINE RAIL-ROAD

EXTENSION COMPANY.

STATEMENT OF PRINCIPAL FACTS AND POINTS

RELIED UPON BY THE REMONSTRANTS, AT THE
HEARING BEFORE THE COMMITTEE.

by
[illegible]
[illegible]

BOSTON:
SAMUEL N. DICKINSON, PRINTER.
1844.

STATEMENT, ETC.

The petitions were for leave to construct a Rail-road of fifteen miles in length, from Boston or Charlestown, to intersect the Boston and Maine Rail-road at Wilmington, which now joins the Boston and Lowell road at that place, forming a branch thereof by the original charter. The remonstrants objected to the project, as not justified by any public necessity, and as conflicting with their chartered rights and the good faith of the State, and the equitable relations subsisting between them and the State, and the Boston and Maine Rail-road.

The principal objects of the proposed arrangement are understood to be, to enable the Boston and Maine Rail-road to take from the Boston and Lowell road all the travel and freight which it now receives from the B. and M. Rail-road; and to take away from the Eastern Rail-road a portion of its travel, estimated by the agent of the Boston and Maine Rail-road at about $10,000 per annum.

The following facts were proved before the Committee:

The Boston and Maine road is a combination of various roads, which have been, from time to time, extended from Andover to the State of Maine.

The Andover and Wilmington road, to which they are thus united, was created soon after the establishment of the Boston and Lowell road, *and as a branch thereof, being so described in its charter.*

The Boston and Lowell road is able to accommodate not only all the transportation at present passing upon it, but ten times as much more.

There are three daily trains of the Boston and Maine road, two of which are intended to meet the Boston and Lowell trains at the junction in Wilmington, *and a separate engine is stationed there to take them, should they not arrive in season to join the regular trains; and the third train has a separate engine for its exclusive use.*

It was conceded that no more delay or interruption takes place than is unavoidable at intersections of Rail-roads. *And the Superintendent of the Boston and Maine road estimated the delay as averaging about* 15 *minutes.*

The proposed road is to pass through the three small towns of Reading, South Reading and Malden, said to contain now an aggregate population of about 7,000 inhabitants. It is to cross Mystic River, just above Malden Bridge, through a part of Charlestown, across the Charlestown Branch Rail-road tracks on a level, and over Charles River, west of the Warren Bridge.

The interruption of Mystic River has been remonstrated against, by the inhabitants of MEDFORD, as injurious to their ship yards, and the navigation of the river, which is considerable, and as impeding the flow of the tide, and thereby permanently injuring the capacity of the stream. And evidence was adduced that the tide, owing as is supposed to the recent alterations of Malden Bridge, does not flow so high as it formerly did, by several inches; and that any further diminution of the quantity of water would be of the most serious and incurable, if not fatal damage, to their ship yards.

And many of the inhabitants of CHARLESTOWN and BOSTON, and the CHARLESTOWN BRANCH RAIL-ROAD COMPANY appeared to remonstrate against the construction of another bridge across Charles River, as obstructing the navigation, increasing the expenses of the articles brought above the bridge, and thereby injuring the value of their wharf estates.

And the CITY OF BOSTON, by the Mayor and Aldermen, has remonstrated against throwing another bridge across the bay, as injurious to navigation, and tending to the injury of the harbor and of the channel; and also against any Rail-roadse ntering the city so as to cross the public streets, three of which this is designed to traverse. And it was proved that the rapidity of the stream, whhic was formerly very great, through old Charles River Bridge, has very much decreased, and that the harbor is filling up, so that the Frigate Constitution cannot now be moored where she formerly lay; and the shore at the Navy Yard has shoaled very considerably, and the harbor about and at the ends of the wharves is rapidly filling up, making the action of a broad and strong stream essential to its preservation. That the Channel just above Canal Bridge had become so much filled up that vessels have grounded there, which formerly went clear.

And although it was shown that in 1826 the mid-channel was then still clear, it is believed by the remonstrants and others, including scientific surveyors, that the harbor is gradually filling up, and that the channel is consequently becoming narrower, and that every further obstruction of the bay above the Charlestown Bridge, which obstructs the flow of the tide into it, and the escape thereof with the waters of Charles River from it, is to be most carefully avoided. And the effects of such a bridge as is proposed, with a draw and two piers, one on each side, of from 150 to 200 feet in the middle of the channel, as an obstruction to the flow of the water, must be apparent to all.

The cost of constructing such a road, with depots, &c. in Boston, is estimated by the Remonstrants to exceed $600,000, although the petitioners affect that it may be done for $450,000; but in their bill they have estimated it at $500,000.

The Boston and Lowell road now brings the passengers and freight of the Boston and Maine road from Wilmington to Boston *at a much less price than the Boston and Maine road charges; and the Boston and Maine road receives the surplus as net profits.*

Thus the *Boston and Maine road charges three cents per mile, or forty-five cents* for each passenger from Wilmington to Boston, — and *allows the Boston and Lowell road only two cents per mile, or thirty cents, and pockets the fifteen*, while the Boston and Lowell road furnishes not only the road, with its double track, but the locomotive power and all the depots — and the Boston and Maine road furnishes only the cars and men to load and unload at the depots.

And, in like manner, the Boston and Maine road receives a profit on all the freight transported on the Lowell road;

The net profits thus received by the Boston and Maine road *from the use of the Lowell road*, being estimated to have been *from* $12,000 *to* $14,000, *during the last year.*

It was not pretended that the Boston and Maine road would bring freight or passengers any more cheaply over the new road than they are brought now over the Lowell road.

And the Boston and Lowell road have offered to reduce the prices over their road, at all times, as low as those which the Boston and Maine road shall charge upon their own, upon freight or passengers coming from that road.

The Boston and Lowell road has a double track; and abundant and uncontradicted testimony was adduced to show, that it is far more safe for passengers than any road can be with a single one, which the proposed road would have.

It was proved that the Boston and Maine road had the same use of the depots, for passengers and merchandize, as the Lowell, Nashua, and Concord roads have, and that the only inconvenience they were put to was from not having larger buildings, and being obliged to use a turn-table; but it was shown that they now had their loading and unloading done at ten cents per ton, which is cheaper than at any other depot in the city, and that the Boston and Lowell Corporation are now filling up land, and preparing for the erection of another spacious merchandize depot.

When the project for extending the Andover and Wilmington road from Haverhill to New Hampshire and Maine was in hand, applications were made, by the projectors, to the stockholders of the Lowell road, to subscribe, with the assurance that the transportation which would thereby be brought to the Lowell road, would greatly increase the value of their stock in it; and they accordingly subscribed largely, in that faith and assurance, as to anticipated receipts from the new road.

It was proved that no Rail-road now existing derives any important emolument from freight, between Boston and any towns not more than ten miles distant, excepting the ice Rail-road to Fresh Pond, as the expenses and inconveniences of carting to and from the depot at each end, together with the cost of transportation on the Rail-road, are greater than that of teaming to and from the city, and as most of the persons in those towns use their own vehicles, and it is much more cheap and convenient to go themselves, or send a baggage wagon around the city, for their various articles, and have them collected and brought to their doors, and their errands and messages done, than to be at the trouble and expense of having them collected and carted to the depot by Boston teams, and then to take and cart them from the depot in the country, to their houses or places of business.

In proof of which it was shown, that the whole amount of freight, on the Providence road, between Dedham and Boston, for the past year, was $1,000; and that this was paid by contract, in gross — the person paying it making no profit upon it, but relying entirely on the profits of the truckage at each end of the road, which he thus secures.

And that, on the Worcester road, the freight for Needham, Newton, and Brighton was only between 600 and 700 tons, for the past whole four years.

And that, on the Eastern road, no freight whatever from Lynn could be procured, although they had offered to bring it for fifty cents per ton.

And that, the freight between Wilmington and Boston, and intermediate places, fifteen miles, on the Lowell road, was only $70 for the past year, though it was stated that some had been received by the Boston and Maine road, the precise amount of which was not given.

Now it is evident that Malden, being within five miles of Boston, and having navigable water up to near the middle of the village, for coasting vessels of considerable tonnage, no freight of any consequence could be anticipated — as the expense *of truckage at each end, and loading and unloading*, would render it more expensive than to carry it in baggage wagons or private vehicles. And it will be seen, by reference to the statistical tables published in 1837, that the manufactures of Dedham exceed those of Reading and South Reading united, by about 60 per cent.;

that those of Needham and Newton exceed them by nearly two hundred per cent.; and those of Lynn by about six hundred per cent.

And as to the profits to be derived from passengers: the population of Reading, South Reading, and Malden is estimated at about 7,000, of which nearly one half resides in Malden, within five miles of the city, who now pay only twelve and a half cents to be transported by omnibus to any part of it to which they wish to go — leaving only a small amount to be transported from such a distance as will give any important income.

And from the evidence adduced as to the income from this source on all other roads, it was considered by the remonstrants to be proved, that the utmost that could be anticipated for the way travel, on the proposed road between Wilmington and Boston, could not exceed $12,000.

The Boston and Lowell Rail-road Corporation charges for passengers and freight, carried in connection with the Nashua and Concord Rail-road Corporations, precisely the same rates charged by them; and charges the Boston and Maine Rail-road *less than is paid by these Corporations, and as little as is paid by any other branch entering upon any other road near Boston, and less than most of them.* And if there be any dispute as to the reasonableness of the tolls charged to the Boston and Maine Rail-road Corporation, the Boston and Lowell Corporation are willing to submit them to the determination of any impartial and competent tribunal, and made such offer before the Committee.

THE POINTS MADE BY THE REMONSTRANTS ARE:

1st. That no case is shown of that public necessity or benefit, which justifies the exercise of the highest of Legislative powers, in appropriating private property and portions of the public domain to the use of a private Corporation —

Because there is *no reasonable pretence that any new line of travel* is to be created, or accommodated, or introduced into the city or state, or any communication between distant places to be made *more expeditious*, *cheap* or *convenient*, it being evident that the new road would not bring any new travel from Wilmington or beyond it; that it would not be so safe as the present road, nor afford any cheaper transportation;

And the accommodation of three towns like Reading, South Reading and Malden, so near to Boston — not being any sufficient cause for the construction of such a road,

Crossing navigable waters,

Interfering with the interests and convenience of the towns of Medford, Charlestown, Cambridge and Boston; and injuring the estates of many of their inhabitants.

2d. That it is against public policy to multiply Rail-roads into the city, endangering travellers upon the common roads, and impairing the comfort and value of private estates by their proximity —

When the great purposes of this mode of communication may be much better accomplished by the establishment of a sufficient number of great main tracks — into which spurs or branches may be inserted, leading to and from collateral towns,

And which could be done here with regard to Reading and Stoneham,

Malden being too near the city to make a Rail-road useful or profitable.

3d. That the investment of $500,000, which is the least that the road could cost, *would be a dead loss of so much of active and profitable capital to the state*, Inasmuch as the present road is capable of, and accomplishes, all the work which the new road could do, excepting the accommodation of those three towns, the business of which, at the extreme, could not more than pay for the annual expenses of maintaining it in repair, and running the cars upon it; — and further, that the diversion of this toll would prevent the gradual reduction of tolls on the Lowell road, that would otherwise take place, and tend to keep a high rate of tolls upon both roads.

4th. That if these three towns require a Rail-road to Boston, and it be thought consistent with public expediency to grant one for their accommodation, let one be given, *but without the right of intersecting the present road*, and thus taking away the emoluments that belong to the Lowell road, by the charters and contracts heretofore created.

5th. That to allow such intersection and diversion of the profits from the Lowell road, is to take away a corresponding portion of the value of the capital stock of the Boston and Lowell Rail-road Corporation, to give it to Dr. Spaulding and his associates, or to the Boston and Maine Rail-road, to enable them to build a road for their use, and is as much a tax upon that Corporation to build a road for the benefit of the towns of Reading, South Reading, and Malden, or of the Boston and Maine Rail-road Corporation, as if the amount were taken directly from its treasury, by a legislative edict.

6th. That the construction of the proposed road would be contrary to equity and good faith, as between the Boston and Lowell Rail-road Corporation, and the Boston and Maine Rail-road, because the Boston and Lowell Rail-road Corporation was *compelled* to receive the Boston and Maine road, *and expended great sums of money upon their road and depots, locomotives, &c., to accommodate the transportation to accrue from the Boston and Maine road,*

And because many of the Stockholders of the Boston and Lowell Corporation subscribed largely for the stock of the Boston and Maine road, upon the assurance that it would increase the value of their stock in the Boston and Lowell Corporation.

7th. That a grant of the right to construct such a road would be in violation of the *good faith of the state, which compelled the Boston and Lowell Corporation to receive the Boston and Maine road, and to make the necessary outlays for that purpose, and thereby created a contract between the Boston and Lowell Corpo-*

ration on one part, and the state and the Boston and Maine Corporation on the other, that the Boston and Lowell Corporation should have the benefit of this line of transportation so long as they could accommodate, and should fulfil their duty concerning it; and there is no question that it is not as entirely and fully accommodated now, as it ever has been or ever can be on any road, or that the Boston and Lowell Rail-road Corporation have not faithfully done their duty concerning it.

8th. That the construction of a road from Boston, Charlestown, or Cambridge, intersecting the Boston and Maine road, at any point between Wilmington and Andover, so long as it continues a branch of the Boston and Lowell road, would be a violation of the rights secured to the Boston and Lowell road, by the twelfth section of their charter, and a palpable breach of good faith on the part of the state.

9th. To allow of the proposed junction of a new branch from Boston, or Charlestown, or Cambridge, with the Boston and Maine Rail-road, at any point within five miles from the line of the Boston and Lowell road, would be a violation of the charter of the Boston and Lowell road, whether the connection of the Boston and Maine road with the Lowell road be continued or not.

Andover & Wilmington
Rail Road

Organized June 1833
In Andover Mass.

Original Directors
Hobart Clark
Abraham Marland
Amos Abbott
John Smith
Merrill Pettingill

First Treasurer
John Flint

Sketches of.
By
Geo S Clark

Hobart Clark
see printed article

Abraham Marland
was born in England
Came to Andover soon after
the Close of the last war with
Great Brittain. was a Woolen Manufact.
began the Manufacture of
Woolen blankets by hand. but
soon became interested in
Manufactory of flannels by
[illegible] Loom Machinery. In fact he was
among the first woolen
Manufacturers in the Country
He built and Established
what is known as the Marland
Mills —— was successfull
and accumulated a large
fortune. He was more than
any one else instrumental in
Establishing the Episcopal
Church in Andover

~~Hon~~

Amos Abbott

Was a native of Andover and for many years carried on a large mercantile business in the town. Was a deacon in the Old South Church many years. Represented the town in both branches of the Legislature and for four years a representative in the Congress of the United States

He died in Andover

John Smith
Was a native of
Scotland. Came to
Andover Early in the twentys
And in Connection with
Mess Faulkner & Richardson
built a Machine Shop in
the Frye village. for the
Manufacturing of Cotton
Machinery. Was very successfule
on the death of his partners
(Faulkner & Richardson) in
Connection with his brother
Peter Smith, and a Mr Dove
Engaged in the Manufactory
of binding twine & Shoe thread
under the name of Smith &
Dove, and at one time it was
said, the Concern Controlled
the Markets of the United States
in these articles. He was a man of
great energy and determination and
accumulated a large fortune
benevolent and liberal in his
Contributions to Every good work
The Theological Seminary are indebted
to him for this beautiful library building
and the the Town of Andover for their
Memorial Hall

Morill Pettingill
Had a large blacksmith
Shop on the main St nearly
opposite the old Locke Hotel
where he did a large business
was a member of the board
Selectman a number of
years, was one of the first
Conductors, between Andover & Boston He died in
South Boston represented the
Town of Andover in the State
Legislature in ~~1833. or~~ 1834.
was born in New Salem NH
June 8' 1793.
Died in East Boston
April 7" 1869

John Flint.

The first Treasurer of the ~~Road~~ Andover & Wilmington Rail Road was John Flint Was Elected at the time the Company was organised: And Served the Co. in that Capacity through its various organizations many years. Faithfully & well He was for a number of years one of its directors. ~~And~~ one of the Towns most usefull and Honored Citizens.

Was born in Andover and was by trade a Cabinet Maker: Had a Shop where he manufactured and sold Furniture. Was the first Treasurer of the Savings Bank. And a director of the Andover Bank a long number of Years He died in Andover

Engineers

For notices of Capt Barney
Genl Geo. S Greene and James Hayward
See printed article

John W Brooks became connected with the road in 1839, and employed on it most of the time afterward until it was completed to South Berwick in 1843. In 1845 in connection with some Boston parties bought of the state of Michigan the Michigan Central RR which had been partially completed by the State he rebuilt it and completed it to Chicago. was one of the early pioneers in western RR building. While connected with the Mich Central was its engineer, Supt & President. a man of great energy and force. a native of Stow Mass #

John T K Hayward

was a nephew of the Chief Engineer James Hayward, became connected with the road in 1839. His principal work was the building of the Hannibal & St Joseph RR in Missouri.

Mr. Brooks died in Heidelberg, Germany, about 1884.

Geo. C. Clark

Was the son of the President became connected with the Road in 1836, and was on the first train that came into Andover Aug 6th 1836, assisted Col Baldwin in making the first surveys in 1833, connected with the Road until completed to South Berwick in 1843, connected with the building of Northern ~~R R~~ N.H., Androscoggin & Kennebec, now part of the Maine Central. Chief Eng of the Rutland & Burlington Vermont; Chester Valley Pennsylvania, Ohio Central, Ohio now the Ohio division of the Baltimore & Ohio; Flint & Pere Marquette, Mich., & other Roads in Ohio & Indiana. Born in Andover (now North Andover Jun 23d 1818.

Edward Appleton

Became connected with the Road in 1839. was on it a number of years. Was Chief Engineer of Roads in Maine Massachusetts and Wisconsin a graduate of Harvard in 1835. Born in Boston. (Now living in Reading. 1894.)

Israel M Spelman
(Harvard, 1836.)
Became Connected with
Road in 1837. Was on it a
number of years, gave up Engineering
and was afterwards Connected with
Several Roads in a financial Capacity
was Eight years Pres. of the B & M R R

Onslow Stearns
Laid out the track from
Wilmington to Merrimack
River Bradford.. Laid the track
of the Nashua & Lowell R R and for
many years its Supt., was Connected
with the Northern R R N H when
built many years its President & General
Manager, also President of the Old
Colony. Member of the New Hampshire
State Senate and Governor
of the State Two years

First Superintendent
was Charles Minot of Haverhill
afterwards Supt of the New York & Erie
(Harvard, 1828. *1866.)

REPORT

ON THE

SURVEY OF THE ROUTE FOR A RAILROAD

FROM

WATERVILLE TO BANGOR,

VIA. DEXTER AND EXETER,

WITH SOME STATISTICS AND REMARKS RELATING TO ITS BUSINESS.

BY GEORGE T. CLARK,
CIVIL ENGINEER.

LAWRENCE:
H. DOUGLASS, PRINTER, (SENTINEL OFFICE.)

1850.

✓

REPORT.

To Elijah Wood, Esq. *and others, of the County of Somerset, and* A. S. French *and others, of the County of Penobscot, Committee to procure a survey for a Railroad from Waterville to Bangor, by the way of Dexter and Exeter.*

Gentlemen: — In compliance with your request, I have made an examination of the route proposed by you for a Railroad; and I now have the honor to report thereon, and submit for your examination estimates of the probable cost of your road, and also maps and profiles illustrative thereof.

It was not expected that this line would be as short as others proposed from Waterville to Bangor; for by a reference to the map of this State, it will be seen that the most Northern point in your line, is from twenty to twenty-four miles North of a direct line. The line of the survey commences at the terminus of the Androscoggin and Kennebec Railroad, in East Waterville, and follows the Westerly bank of the Kennebec river about twelve miles, passing near Kendall's and the Somerset Mills, in Fairfield, and crossing the river near the South line of the town of Bloomfield, five miles below the village of Skowhegan, and eight miles from the village of Norridgewock.

The profile of this portion of the line exhibits a somewhat broken surface, similar to the banks of most large streams; but the amount of work required will be light, in comparison with the average of New England roads, being but about twenty thousand cubic yards per mile.

The surface of this portion of the line indicates a loose, gravelly soil, easy to be moved; there are also some indications of ledge, which I think could be avoided in the final location. Kendall's, and the Somerset Mills, are large establishments, extensively engaged in the manufacture of lumber, and from which might be expected a large amount of business.

If a connection with the A. and K. Railroad was the only consideration, the line might be shortened about three and one-half miles, by leaving that road near the Marston bridge, three and a half miles from West Waterville Depot, crossing the Emerson stream and keeping in the valley of the Tobey stream, passing about one-half a mile East of the village of Fairfield, and entering upon the line surveyed near the house of Colonel Fowler, at Nye's corner, in Fairfield.

Near where the line crosses the river, the road would command the travel and business of Skowhegan, Norridgewock, the Northerly and Easterly portion of Franklin County, and that portion of Somerset County lying upon the valley of the Kennebec river. To cross this river, will require a bridge of eight hundred feet in length, with six bays, or spans, of one hundred and thirty-three and a third feet each. The land on the East side of the river is much higher than that on the West, and in order to avoid an expensive cutting on the East side, it will be necessary to place the bridge about thirty feet above the stream; this will also give security to the bridge against freshets and ice. Soundings made in the river indicate the bottom to be ledge, and of smooth surface, making a good foundation for the masonry. The earth in the cutting on the East side (which is sand) will be required to make the embankments at each end of the bridge. After reaching the high level on the East side, we can have a level grade for one and three-fourths miles, and a straight line for two and one-third miles. On leaving these plains, we enter the valley of the Carabasset, the outlet of the Sybley and Vincent ponds, passing through the centre of the village of Canaan, continuing in the valley of the Carabasset until we reach the high ground dividing the waters of the Carabasset and Sebasticook, near a small pond, known as Bowley's pond, in the town of Hartland. From this place to the Sebasticook the ground falls rapidly, and in order to avoid expensive cutting, we are obliged to follow a somewhat circuitous valley until we reach the valley of that stream; therefore the general alignement ([redacted]) of this portion is not as favorable as the preceding. Much of the work now shown on the profile I think could be avoided, and the curvature reduced. Crossing the Sebasticook at what is termed the narrows, with a bridge of one hundred and fifty feet in length, near the North-westerly corner of Palmyra, and a few rods below the village of Hartland, we follow the valley of Indian stream, passing near the new mills and the village at the centre of St. Albans. Another line was here spoken of, to leave the line at the Southerly side of Charity Meadow, and cross the Sebasticook above the village of Hartland at the upper dam. It was thought by some that by this arrangement, steamboats of small size could be used advantageously on Moose pond, the head waters of the West branch of the Sebasticook, in freighting between the road and Athens, Harmony, and other towns lying North and North-west of this pond. This would increase the length of the road, and cost of construction, and is a question that should be considered in the final location. At Canaan, Hartland, and St. Albans, there are several mills extensively engaged in the manufacturing of lumber of different kinds; also at each of these places there are tanneries of considerable size, and a large amount of water power not now in use.

From St. Albans the line passes along the Easterly shore of great and little Indian and Half-moon Ponds, the Westerly shore of Mower's Pond in the North-westerly corner of Corinna, entering upon the town line of Dexter, a few rods North of Mower's Pond, at what is termed the South-ridge road and striking the Newport road about one and a half miles South-westerly of the village of Dexter, near the house of Horace Jose. The direction of the line from Kennebec river to Dexter is North-easterly from the Sebasticook to Jose's in Dexter — the surface of the country is remarkably smooth, in a distance of about twelve miles the grade of over seven of it can be level. From Jose's the line curves to the North, in order to take advantage of the rise of ground in crossing Dexter stream, and assist in getting over the high ground between Corinna road and the Southerly end of the Puffer Pond; this cut may perhaps be considered the most serious obstacle on the line, as a large proportion of it will undoubtedly be ledge, and for which an allowance of twenty-five thousand yards is made in the estimate. From this point the line crosses the Puffer Pond at a point known as the narrows, to the Southerly side of Copeland Pond; leaving this water we enter into the valley of the Garland stream, the North branch of the Kenduskeag, keeping upon the Northerly side of this valley, passing near the village and mills of West Garland, and crossing the stream a few rods below Bartlett's mills at Garland village. From Copeland Pond to West Garland village, the surface of the country is very smooth and of gentle inclination; from West Garland to where the line crosses the stream we shall encounter some ledge, and a descending grade of 39.60 feet per mile for one and three-fourths miles will be required to reach the general level of the valley below Garland village. From this place the line keeps on the Westerly side of the stream about one and a half miles, then crossing to the East side near Skinner's mills, keeping on this side about one-half mile; it then re-crosses, and keeps on the Westerly side to the Corinth road, near where the Garland and Exeter streams unites and form the Kenduskeag. It then re-crosses to the East and continues on this side eleven miles, passing near Huntting's mills about one and a half miles West of East Corinth village and crossing the West village road, near the house of N. Herrick, Esq., about one mile and a quarter East of that village, passing near the mills of Mr. Roby, in the Southerly part of Corinth, near Mr. Higgins' mills, through the centre of the village of Levant, and crossing the Kenduskeag about three-fourths of a mile East of the old Levant road; after crossing the stream it follows along the slope or side-hill that makes down to the valley of the stream, crossing the six miles fall road, and the old Levant road near the house of the Hon. M. Mitchell, then curving East crossing the Avenue road at the foot of what is known as the Hermon hill, in the town of Hermon, continuing South nearly three miles and connecting with the line surveyed by E. Appleton, Esq., through Newport, where that line crosses the Carmel road; it then takes a Southeasterly course, approaching the Penobscot river in the Northern part of Hampden, "there curving to the North it enters the city of Bangor near Dennett's cove with such a direction and grade as to allow of the track being readily extended along all the wharves of the city up to the mouth of the Kenduskeag."*

Another line was surveyed leaving the line before described North of the village of Levant, crossing the Kenduskeag West of that village, then continuing in a Southerly direction, crossing the Avenue road a few rods East of Varney's hotel in South Levant; but the ground South of the road was found so high as to render the time impracticable; this survey is indicated on the map by a dotted line. From the junction of the Garland and Exeter streams to where we leave the Kenduskeag valley the surface of the country is generally very smooth; we cross two or three horse-backs or deposites of fine gravel, which will be needed in the construction of the road. At the old Levant road-crossing there will be twenty feet cutting for a short distance, and between the Carmel road and Bangor will be found some ledge.

At the request of the citizens of Exeter, another line was surveyed, leaving the line before described near Half-moon Pond in the North-west corner of Corinna, passing through the Northerly portion of that town, a little North of the central part of Exeter, and entering upon the line surveyed near the junction of the Garland and Exeter streams; this shortens the main line a little over two miles. Through the town of Corinna this line will be somewhat expensive, as heavy embankments will be required in crossing the Dexter stream and Knowles' brook, and considerable ledge will be found on different portions of the line. The whole length of line from Waterville to Bangor surveyed by the way of Dexter is 77.23 miles; 51.40 miles of it are straight, the remainder consists of curves of from two to five thousand feet radius. The GRADES of the line through Dexter are 27.76 miles of the maximum inclination 39.60 feet per mile; 19.61 miles of less inclination, and 29.86 miles level.

The whole length of line by the way of Exeter is 75.13 miles; 49.71 miles of which are straight, the remainder consists of curves of from two to five thousand feet radius. The GRADES of the line through Exeter are 29.28 miles of 39.60 feet inclination per mile; 19.40 miles of less inclination, and 26.45 miles level. No grades of greater inclination than 39.60 feet per mile, nor curves of less radius than 2,000 feet will be required.—Another line was spoken of which, I think, should be thoroughly examined before location, which is to continue the line surveyed, down the valley of the Kenduskeag, instead of connecting with the Newport survey, and enter the city of Bangor by that valley. There are many reasons, I think, why this line should be considered. 1st. It would probably shorten your line three and a half miles. 2d. The ascent in leaving the city would not be near as great as by the line surveyed, for by reference to the profile it will be seen that where we cross the Kenduskeag, a distance of about ten miles from Bangor, the height of the stream above tide water is one hundred and five feet, making the average rise ten and a half feet per mile, while the longest continued ascent we have on the line surveyed is in leaving tide water at Bangor which is 39.60 ft. per mile for three miles; most of this line could be cheaply constructed, except about a mile and a half in leaving the city. On this stream below where we cross it with the surveyed line, there are several mills which are extensively employed in the manufacture of lumber. (The objections to this line are that it would pass over valuable real estate; over or under two of the most thronged streets of the city, and materially injure the valuable wharf accommodation at the mouth of the Kenduskeag, and that suitable depot accommodations could not be furnished for the road, as the character of the business that would probably be done on your road, would require extensive depot and wharf accommodation, a large portion of the freight being lumber and such articles as require much space.)

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* From E. Appleton's Report of the Newport Survey.

Should the lines before spoken of, starting from the A. and K. Railroad near Marston's, and entering the city of Bangor through the Kenduskeag valley be adopted, it would probably reduce the length of the line by the way of Dexter to about seventy miles; by the way of Exeter to about sixty-eight miles.—The land damages must be very small as we pass over but very little land that is cultivated, most of it being in a primitive state, and in many instances we have been assured that the land would be given. The embankment exceeds the excavation to such a degree as to lessen considerably the cost of the earth work, it being what is termed "borrowed earth," can be thrown up from the sides cheaper than it can be hauled from the cuts, and also enabling us to place the road-bed high, which is an important consideration.

In a country so subject to the action of frost as this, a road cannot be kept in good repair without at least two feet of dressing of clean sand or gravel; we find deposites of this material along the line, but not so frequent as would be desired.

It will be necessary to put on this dressing with an engine and cars, after the track shall be laid, and for this an allowance of $1,000 per mile has been made in the estimates. The superstructure for which I have estimated, is similar to the A. and K. Railroad Company, which is a bridge rail, weighing about 63 pounds per yard, or about 100 tons per mile, to be laid on cedar sleepers eight feet long, and six inches thick, placed about 2 1-2 feet apart from centre to centre, the rail to be secured at each end by cast clasp chairs, weighing about 24 pounds each. In regard to the running furniture of the road, I have made the estimates for a large business.

The estimates are based upon the line actually run without making the deductions of which it is capable; the estimates for ledge, I consider to be ample. The estimates are also based upon a road-bed which would be 15 feet wide at grade on embankments, and 25 feet wide at grade in the cuts.

ESTIMATES.

Estimate from the terminus of the A. and K. Railroad to the Skowhegan road, near the line of Bloomfield, marked A on the profile. 11.91 *miles.*

232,000 yards of earth, at 16 cts. per yard, .	$37,120 00
1,461 yards of culvert masonry, at $2 per yard,	2,922 00
1 road bridge, ...	250 00
100 rods of grubbing, at $1 per rod, . . .	100 00
4 acres of clearing, at $15 per acre, . . .	60 00
Gravelling, at $1,000 per mile, . .	11,910 00
Amount, ...	$52,362 00

Estimate from point A to junction of Dexter and Exeter line, marked B on the profile. 25.06 *miles.*

Bridge across the Kennebec, 800 ft., at $16 per foot,	$12,800 00
545,000 yards of earth, at 15 cents per yard,	81,750 00
14,000 yards of ledge, at $1 per yard,	14,000 00
2,500 yards of bridge masonry, at $5 per yard,	12,500 00
1,430 " " " at $3 "	4,290 00
1,490 " " " at $2 "	2,980 00
Abutments for bridge at Showhegan road,	615 00
" " " Canaan Stream,	450 00
" " " Indian Stream,	750 00
" " " Black Brook, (Canaan,)	300 00
" " " the Sebasticook, 300 yds, at $2,	600 00
150 feet of bridge across the Sebasticook,	2,400 00
10 acres of grubbing, at $160 per acre,	1,600 00
180 acres of clearing, at $15 per acre,	2,700 00
Gravelling 25.06 miles, at $1,000 per mile,	25,060 00
Amount,	$162,795 00

Estimate from point B, via Dexter, to junction of the Exeter line in Corinth, marked C on the profile. 15.26 *miles.*

200,000 yards of earth, at 18 cts. per yard,	$36,000 00
48,000 yards of ledge, at $1 per yard,	48,000 00
Abutments of bridge at Dexter Stream,	1,075 00
1,539 yards of culvert masonry, at $2 per yard,	3,078 00
9 acres of grubbing, at $160 per acre,	1,440 00
120 acres of clearing, at $15 per acre,	1,800 00
Gravelling 15.26 miles, at $1,000 per mile,	15,260 00
Amount,	$106,653 00

Estimate from point C to Dennett's Cove, Bangor. 24.98 *miles.*

441,000 yards of earth, at 20 cts. per yard,	$88,200 00
15,000 yards of ledge, at $1 per yard,	15,000 00
Abutments of bridge at the Kenduskeag,	1,398 00
130 feet of bridge at Kenduskeag, at $16 per foot,	2,080 00
1,910 yards of culvert masonry, at $2 per yard,	3,820 00
1 road bridge,	300 00

13 acres of grubbing, at $160 per acre,	2,080 00
180 acres of clearing, at $15 per acre,	2,700 00
Gravelling 24.98 miles, at $1,000 per mile,	24,980 00
Amount,	$140,558 00

Estimate from point B, via Exeter, to junction in Corinth, marked C on profile. 13.16 *miles.*

235,000 yards of earth, at 18 cts per yard,	$42,300 00
43,000 yards of ledge, at $1 per yard,	43,000 00
119 yards of arch masonry, at $5 per yard,	595 00
2,135 yards of culvert masonry, at $2 per yard,	4,270 00
8 acres of grubbing, at $160 per acre,	1,280 00
90 acres of clearing, at $15 per acre,	1,350 00
Gravelling 13.16 miles, at $1,000 per mile,	13,160 00
Amount,	$105,955 00

The grading, masonry, and bridging alone, by the way of Dexter, will be equal to $5,986 76 per mile.

By the way of Exeter, will be equal to $6,144 81 per mile.

Estimate of one mile of superstructure.

2,100 sleepers, at 15 cts. each,	$ 315 00
600 chairs,	360 00
4,500 pounds of spikes, at 4 1-2 cts. per pound,	202 50
100 tons of rails, at $50 per ton,	5,000 00
Laying track and distributing materials,	350 00
Amount,	$6,227 50

To provide for a sufficient length of side track and turnouts, by the way of Dexter, 81 miles would be necessary, making	$504,427 50
To provide for a sufficient length of side track and turnouts, by the way of Exeter, 78 miles would be necessary, making	$481,745 00

Buildings and other fixtures, via Dexter.

2 turn-tables at $800 each,	$1,600 00
2 engine houses, at $1,500 each,	3,000 00

1 passenger station at Bangor, ...	$3,000 00
1 passenger station at Dexter, ...	1,500 00
9 passenger stations, at $500 each, . . .	4,500 00
1 freight house, ...	1,500 00
1 freight house, ...	1,000 00
Amount, ...	$16,100 00

Buildings and other fixtures, via Exeter.

2 turn-tables, at $800 each, ...	$1,600 00
2 engine houses, at $1,500 each, . . .	3,000 00
1 passenger station at Bangor, ...	3,000 00
1 passenger station, ...	1,500 00
8 passenger stations, at $500 each, . . .	4,000 00
1 freight house, ...	1,500 00
1 freight house, ...	1,000 00
Amount, ...	$15,600 00

Fencing will be required on less than half the distance by the way of Dexter — say 30 miles, at $400 a mile, $12,000 00
By the way of Exeter, say 28 miles, at $400, 11,200 00

RECAPITULATION.

Waterville to Bangor, via Dexter.

Grading, masonry, and bridging, ...	$462,358 00
81 miles of superstructure, ...	504,427 50
Buildings, etc., ...	16,100 00
Fencing and land damages, ...	18,000 00
	$1,000,885 50
Add ten per cent. for superintendence and contingencies, ...	100,088 55
	$1,100,974 05

Equal to $14,255 78 per mile, on 77.23 miles.

Waterville to Bangor, via Exeter.

Grading, masonry, and bridging,	$461,660 00
78 miles of superstructure,	481,745 00
Buildings, etc.,	15,600 00
Fencing, and land damages,	17,200 00
	$976,205 00
Add ten per cent. for superintendence and contingencies,	97,620 50
	$1,073,825 50

Equal to $14,293 03 per mile, on 75.13 miles.

Estimates of running Furniture.

7 engines, at $7,000 each,	$49,000 00
8 passenger cars, at $1,700 each,	13,600 00
4 baggage cars, at $450 each,	1,800 00
40 freight cars, at $275 each,	10,000 00
40 freight cars, at $500 each,	20,000 00
3 snow ploughs, at $500 each,	1,500 00
11 hand cars, at $75 each,	825 00
	$97,725 00

To estimate the probable amount of business that would be done on your line, with any degree of accuracy, would be impossible — passing, as it does, through a country comparatively new, with many of its resources yet undeveloped. Build this road, and the manufacturing of short lumber, which is now prosecuted to a great extent, would be carried a corresponding distance into the interior. Ship timber, and hard wood lumber, [illegible] owing to its distance from [illegible] of but little value, would [illegible] s, and the transportation [illegible] of income to the road.

Probably no line of railway could be opened into the interior of the State, that would be of more advantage to the lumber interest than this. By a glance at the map of the State, it will be seen that those engaged in lumbering, either upon the head waters of the Kennebec, or the East and West branches of the Penobscot, would pass over this line, leaving it at Dexter, its most Northern point, thirty miles from Moosehead Lake, where nearly all the teams centre that are engaged in lumbering at those places. It is estimated that the average number of lumbering teams that go into the woods annually, by the way of Moosehead Lake, and that would pass over this road, is not less than three hundred — consisting of six oxen to a team, with twelve men, and ten tons of supplies, exclusive of hay; making in round numbers, nine hundred yoke of oxen, thirty-six hundred men, and three thousand tons of supplies. A large number of the teams that lumber on the East branch, annually, and now go into the woods, and are supplied through Patten, would take this road to Dexter, carry to Moosehead Lake; thence crossing by steamboat, take the wooden railway, carry to the West branch, thence by steamboat down the West branch to Chesuncook, thence up the river to Mud pond, thence crossing the two miles, carry to Chamberlain Lake, and to the whole Northern chain of lakes. The transportation of men, oxen, and supplies, over a part of this road, would coustitute a very considerable portion of freight.

From statistics furnished me by Geo. A. Hobbs, and V. R. Tuttle, Esqs., of Canaan, the estimated amount of tonnage in the county of Somerset that would come upon your road, (including the towns of Fairfield, Canaan, Hartland, St. Albans, Skowhegan, Norridgewock, Bloomfield, Madison, Harmony, Athens, Pittsfield, and Palmyra,) is about 30,000 tons.

Dexter, before spoken of as the most Northern point of your road, is a large manufacturing town, and one of great importance to the road.

Should the line through Exeter be adopted, Exeter would occupy the same position as that given to Dexter. It is a fine agricultural town, probably the best in Penobscot County.

The following statistics relative to the business in the towns lying on and adjacent to the line of your road, in the counties of Penobscot and Piscataquis, which might be expected to pass over your road, I here insert, as furnished me by John L. Hodsdon, Esq., of Exeter.

TOWNS.	Factories for Flannels, Tweeds, Cassimeres, &c.	Saw Mills.	Grist Mills.	No. of run stones.	Clapboard and Shingle Mills.	Tanneries.	Founderies.	Machine Shops.	No. of Stores.	Tons of Freight to and from Bangor.	Potash manuf'ys.	Plough manuf'ys.	Wag. & Sleigh do.	Clothing & Full'g Mills.	Turn'g estab'nts.	Fork, Hoe and Shovel manuf'ys.	Cooperages.
Dover and Foxcroft,	2	7	3		8	1	1	1	12	1,400	2						
Dexter,	5	6	2	4	4	1	1	2	11	3,000	1		1		1	1	
Corinna,		5	1		6	1			4	1,000	1		2	1			
Garland,		5	1		5	1			4	2,000			1				
Exeter,		4	1	3	6	1			6	3,000	3	1	1	1			
Corinth,		4	2		5				6	2,500			5				5
Charleston,		7			7				3	1,200			1				2
Bradford,		2			3	2			3	1,500			1				5
Levant,		9	1	4	13		1		9	12,300			1				
Sangerville,		5	2		7	2			5	1,000							
Guilford,		1	1		4	1			3	700							
Parkman,		3	1		2				3	800	1						
Monson,		3	1	4	3				5	1,200							
Shirley,										1,000							
Elliotsville,																	
Greenville,																	
Blanchard,																	
Stetson,		5	1		5	1			4	2,000	1		1				
Atkinson,										500							
Kirkland,										500							
Abbott,		2	1		2				2	400	1						
	7	68	18	15	80	11	3	3	80	40.900	10	1	14	2	1	1	12

Another very important source of income to the road will be what is termed the local travel. The statistics of this travel I have not been able to obtain so accurately as might have been desired. Experience, however, has shown that it is this character of travel that is the greatest source of income, and that the best dividend paying roads are those that depend upon a local, rather than a through business.

I find the stages now passing over your line, the business of which might be anticipated to come on to your road, and considered as the local travel, to be — two daily stages between Waterville and Skowhegan, a daily between Dexter and Waterville, a daily between Skowhegan and Bangor, through Dexter and Exeter, six stages a week between Bangor and Moosehead Lake, through Dover, six stages a week between Hartland and Waterville, six per week between Hartland and Bangor, and a daily between Levant and Bangor.

The largest proportion of what is termed the through travel, that is, that between Bangor and Portland, and west of that city, which now goes in the steamboats to Portland, and by railroad west, might be anticipated to pass over your road. There are now running between Bangor, Portland, and Boston, two steamboats; one between Bangor and Portland six times a week; one between Bangor and Boston four times a week, and two daily stages between Bangor and Waterville in connection with the Androscoggin and Kennebec Railroad.

No great amount of through freight can be expected to pass over your road between Bangor and Portland, and west of that city, situated as they are on navigable waters. A large proportion of the freight to be depended upon, must be that destined to the interior, and from the interior to other interior portions of the country, and to navigable waters.

At the request of the citizens of Dover and Foxcroft, I made a reconnoisance of a line from Garland to their villages, and at the request of some of the citizens of Dexter, one from their village to the same places. Both I consider practicable. Both would require an ascending grade of about sixty feet per mile for three miles, on leaving the line surveyed. After overcoming this ascent, a very favorable line can be found to Piscataquis river from either of the above villages. The estimated distance from Dexter is twelve miles, from Garland, thirteen. Dover is the shire town of Piscataquis County, situated on the river of that name, opposite Foxcroft. The villages of these towns are contiguous, lying upon each bank of the river, and, when combined, become of considerable importance, a large mercantile and manufacturing business being carried on there. The Piscataquis river at this place affords a large water power, but little of which is now used.

As that part of your line south of Dexter will constitute a part of the main line of railway into Piscataquis County, and as a large portion of the business of this county must fall upon your road, I think I shall not digress from the objects of this report, in stating some of the resources of this comparatively new, yet prosperous county, second to none in the State in the elements of wealth. The importance of a railroad communication between this county and Bangor, and other portions of the State, cannot well be over-estimated, when we take into consideration its agricultural, lumbering, and mineral resources.

As an agricultural county, many of the townships now settled will compare favorably with other portions of the State. In 1837, there were but seventeen towns in the State that raised ten thousand bushels of wheat. Dover and Sangerville were two of these. Parkman raised over six thousand; Atkinson and Milo, about five thousand. Since that period, (thirteen years,) I am informed the county has made rapid progress in agricultural improvements. About two years since, the town of Dover and its immediate vicinity, received over twenty-seven thousand dollars for stock sent in one season to Brighton.

Of the advantage of this line of railway to the lumbering interest of Maine, I have spoken in another part of this report. I would reiterate that an important source of income to your road, will be the transportation of short lumber, for the manufacture of which, an abundant supply of the best material is to be found upon the timber townships — now so remote from market as to preclude its transportation by the present means of conveyance. The building of a railroad into the interior, will have the effect of carrying the manufacture of this lumber thirty or forty miles farther into the interior, among townships now full of what would otherwise be waste lumber.

Another source of income will be the transportation of iron from the Katahdan iron works; about five thousand tons are here annually manufactured. The capacity of these works for prosecuting the business will undoubtedly be increased in the event of an advance in the price of iron. The transportation of this iron over a portion of your road, may be counted upon as another source of income, as it is believed that an inexhaustible supply of the best quality of ore is to be found in the immediate proximity of the furnace, and the entire township is covered with a vigorous growth of wood, which will supply the demand for charcoal for the present consumption, and the adjacent towns may be made to subserve an increased demand.

The remaining one of the principal sources of business for a road, will be the transportation of slate from this county to tide waters at Bangor, and other parts of the country. This slate has been ascertained to be equal, in all respects, to the best im-

As Chief Engineer of the [illegible]
& Washington R R or [illegible]
& located and built the first
R R into the [illegible] Slate
quarry of [illegible] in 185[illegible]
1852. G T E

Since this report was written, fine slate have been found in Rutland County Vermont: also in Pennsylvania and a very superior quality on the coast of Lake Superior Michigan
G T E

ported article, and is found to occupy a tract of country twenty-five miles in length, by from one to five in breadth.

From what I have been able to learn, no quarries have yet been discovered in America which can compare with the Welsh, or Piscataquis slate, for beauty, strength, or durability. There is a small quarry in Vermont which has been worked for sixty years; the slate is of a gray color, strong, and very rough. It is all sold in the immediate vicinity of the quarry. A few miles above Havre de Grace, on the Susquehannah, there are quarries on both sides of the river, the slate being of a soft texture, and absorbing water readily. The slate taken from the quarries at Lehigh Gap, is of a brittle, rotten kind, and is not laid on the best buildings. On each side of the Delaware river there are quarries from which a large amount of roofing and writing slates are made, but they will in no way compare with the Welsh, or Piscataquis slate. There is a small quarry in New Brunswick, or Nova Scotia, from which they obtain a rough kind of slate. I can learn of no others of importance in America.

According to the returns made to the Secretary of State in 1848, the value of all kinds of slate imported that year, was about $300,000, (including duties,) principally roofing slates; and the demand is constantly increasing.

Slates are reckoned by long hundreds; that is, 1200 for 1000. The price is regulated by a size known as the ladies' slate, which is sixteen by eight inches. They are laid by the square, one hundred superficial feet to the square. Twelve hundred ladies' slates will cover four hundred and sixty-eight feet; to cover the same surface with shingle, would require about five thousand. The average price of the imported article is from sixteen to eighteen dollars, though last year the importers sold them for twenty-two. When the Welsh slate (ladies' slate) will not bring $9 66 per 1000, (1200,) they remain in their yards. It can be delivered at the yards of the Piscataquis quarries, for $6 25. Open a railroad, and this slate can be delivered at tide water at Bangor, as cheap as the Welsh slate can be at the quarries in Wales.

There are two quarries of considerable importance now worked in Piscataquis County, by A. H. Merrill, and S. E.

Crocker, Esqrs. The workmen are principally from the quarries in Wales, and they unite in saying that it requires less labor to make slate in these quarries, than it does from those in Wales, as the stone works more freely. The transportation of this slate must, in time, become a source of great income to the road, on account of its durability as a covering, and the risk of fire being less than of wood.

By the building of this road, you will open from Waterville twelve miles of railway up the Kennebec, towards Skowhegan and Norridgewock, and important portions of Somerset and Franklin counties, and also twenty-five miles from Bangor, towards the important county of Piscataquis; and in fact, your whole line passes through a section of your State second to none in agricultural and manufacturing resources. Your road will command a large local travel, and an extensive freighting business, and will be in a great degree independent of steamboat, and other competition.

The result of the completion of this road cannot be better expressed than it has been by E. Appleton, Esq., in his report on a survey made under his direction, for a railroad from Waterville to Bangor, via Newport, in which he says: "The completion of this road, in connection with the Androscoggin and Kennebec, and Atlantic and St. Lawrence Railroads, secures an unbroken line of railroad communication, extending through an interior country rich in agricultural resources, and having an inexhaustible amount of water power for manufacturing purposes, and terminating at either end at a sea-port renowned for its enterprise and successful commerce — thereby affording an excellent market for the produce of the country, in whichever direction it may be carried. And the completion of the Atlantic and St. Lawrence Railroad to Montreal, will undoubtedly bring upon the line of road we have been considering, a vast additional amount of business in the transportation of nearly all the supplies of flour, etc., for the State of Maine, from the rich fields of the Western States, in preference to the more tardy and circuitous route by water hitherto employed."

In conclusion, allow me to express my obligations to my assistants, A. B. Crosby, and Samuel Wood, Esquires, for their valuable services in making the surveys, plans, and estimates, and to other gentlemen who assisted me in the survey. Also, to A. W. Wildes, Esq., of the Androscoggin and Kennebec Road, for notes of surveys from Waterville to Nye's Corner, and from the Carmel road to Bangor; and also to the several gentlemen who have furnished valuable statistical information relating to the interest of your road.

For the completion of this enterprise, so important to the interior interest of your State, you have my warmest wishes.

I am, Gentlemen,
With great respect,
Your obedient servant,
GEORGE T. CLARK.

June 1st, 1850.

The [illegible] had in oxygen
in Anchors and in Earth
I would have all the creation
expire. G T C

REPORT

OF A

SURVEY AND ESTIMATE

FOR A

RAIL-ROAD

FROM

WATERVILLE TO BANGOR,

MAINE.

BY EDWARD APPLETON,
Engineer of the And. and Ken. R. R.

WATERVILLE:
E. MAXHAM, PRINTER....'MAIL' OFFICE.
1848.

REPORT.

To the President and Directors of the Androscoggin and Kennebec Railroad.

Gentlemen,—

During the past winter, according to your directions, and in compliance with the request of the inhabitants of Newport and the intervening towns, who contributed to the expense, a survey was made for an extension of your railroad from Waterville to Newport. Upon the completion of the survey to that town, the citizens of Bangor desired that it should be extended to that place, and it was accordingly done at their expense. We have now, therefore, a survey of a route for the entire distance from Waterville to Bangor, which can be adopted, if desired, by the company to be organized under the charter of the Penobscot and Kennebec Railroad.

Upon glancing at the map of the State, it is evident that a *direct* line from Waterville to Bangor must encounter many obstacles. Many streams appear to have their sources in this region, and the formidable hills in Dixmont and the neighboring towns are well known to travellers. But a little farther north, we observe the head waters of the Sowadabscook, (which empties into the Penobscot a little below Bangor,) approaching very near to the east branch of the Sebasticook, a tributary of the

Kennebec, emptying into it at Winslow, opposite Waterville. It would seem probable, from this inspection of the map, that by ascending the valley of one stream, and then crossing over into, and descending, the valley of the other, a very favorable line for a railroad might be obtained. It is this route, so well defined by nature, which we have followed in the present survey, and it proves to be a *remarkably* good one.

The whole distance from the Kennebec River at Waterville to the wharves at Bangor is 54 1-4 miles. Of this distance, *four-fifths* consists of straight lines. The remainder consists of curves, generally of 4000 or 5000 feet radius; but in no case will a shorter radius than 2000 feet be requisite. As to grades, the steepest inclination found necessary is 39.6 feet per mile. Out of the whole length, 14 3-4 miles are level; 4 1-2 miles, from 10 to 20 feet per mile; 7 1-4 miles, from 20 to 30 feet per mile; and the remainder from 31 feet to 39.6 per mile. The longest continuous ascent at the maximum rate of inclination is 3 miles, occurring in the ascent from tide water at Bangor to the high table land back of the city.

The most expensive portion of the route is at the western end, including, as it does, the bridge across the Kennebec River at Waterville. Four different lines for crossing the river have been examined; one at Rock Island, immediately above the Ticonic Bridge; one at the College Rips; a third at Bacon's Narrows, immediately above the Colleges; and the fourth at Kendall's Mills. Of these, the *third* is much the best. The river at this point, is contracted into a narrow channel, with rocky banks on each side. A bridge can be thrown across of a single span of 200 feet between abutments; thus avoiding the necessity of building a pier in the middle of the river, exposed to the full force of the freshets, and the ice and timber which they bring down. The ledge upon each side is above the ordinary height of the water, so that the foundations can be prepared with very little trouble. At no other place are these advantages found. I have made the following estimate of the cost of this bridge, viz.:—

2082 yards of masonry, at $7 per yard,	$14,574.00
280 yards " " at $3 per yard,	840.00
220 feet Truss Bridge, at $17.50 per foot,	3850.00
	$19,264.00

The general level of the country on the east bank of the Kennebec River, is much higher than the western side; and the ascent to this level requires a considerable amount of excavation. In some places the ledge evidently rises very near to the surface; in others there are no signs of it. Upon the route selected, we are able to take advantage of the valley of a small brook in rising to the high land, and the line can be so adjusted to the sides of it as to avoid all ledge cutting, and also to diminish materially the amount of earth excavation indicated by the preliminary line now run.

After reaching this high level, the surface of the country is generally very smooth. In some parts, to overcome long swells, we make use of the maximum rate of inclination; but there is neither excavation nor embankment, from Sebasticook to Newport, more than 20 feet in depth, and but a small quantity of that. The general direction of the line, on this part of the route, is north-east; and it is brought within about half a mile of all the villages it passes; viz., Sebasticook, Clinton, Burnham, Pittsfield, and Detroit. At each of these villages the water power is already brought into use; and between them there are many more sites on the Sebasticook, which will without doubt be soon occupied. At Clinton and Pittsfield, large quantities of lumber are annually manufactured, which would form an important item in the freight of the road. At Burnham and Detroit are large tanneries, and at Newport several kinds of manufacturing are carried on.

At Pittsfield, we cross the western branch of the Sebasticook, about a quarter of a mile below the mills, by a bridge 120 feet long. At this place, another route was spoken of, crossing the river about half a mile above the mills, at a place called the Douglas Ledges. This route would probably be somewhat longer than the one surveyed, but it would better accommodate the towns of Hartland and St. Albans lying farther north, and deserves a thorough examination prior to a final location. It would probably come almost as near Detroit as the present line, as it is necessary to approach Newport village nearly on the line now surveyed.

Newport is a village of some importance, at the southern extremity of a large pond, from which issues the eastern branch of the Sebasticook river. Thirteen miles north of Newport is Dexter, a large manufacturing town, to which, at the request of its inhabitants, a branch line from Newport was surveyed, and found to be feasible; and it is said by some, that the most practicable route to the Barnard Slate Quarries and the Katahdin Iron Works, is by way of Dexter and Dover; but this of course must be demonstrated, when the proper time arrives, by surveys.

Crossing the eastern branch of the Sebasticook at Newport village, by a bridge about 100 feet long, the line then curves to the south, passing near the south cove of the pond, and then passes over the summit between the waters of the Sebasticook and those of the Sowadabscook. This summit region, in the north-east corner of Etna, abounds in ledge; but we succeeded in obtaining a very good line through it, requiring no long planes of the maximum rate of inclination, and but a small amount of ledge cutting. Passing along the south-western shores of Carter's Pond, and Etna Pond; the line then enters the valley of the Sowadabscook, which it follows for some distance, crossing it three times by bridges, (not very costly ones, however,) and twice where the course of the stream can be changed, and the expense of bridges thereby saved. The line passes near Etna village, near Emery's, Fuller's, and Chamberlain's Mills, on the Sowadabscook, and crossing the Carmel road a little north of that village, proceeds in nearly a direct line to Hermon Pond, crossing the Sowadabscook for the last time near its entrance into that Pond. The line then continues along the northern shore of Hermon Pond, and thence in a direct course to a point near the Steam Mill, on the road from Bangor to Carmel, at the outlet of the Great Bog. Hermon village is about a mile north of the line. From the Steam Mill above named, the line tends more to the south, approaching the Penobscot River in the northern part of Hampden; thence curving to the north, it enters the city of Bangor near Dennett's cove, with such a direction and grade, as to allow of the track being readily extended along all the wharves of the city, up to the mouth of the Kenduskeag.

The route from Newport to Bangor, requires more excavation and embankment, for the formation of the road-bed, than the equal distance from Sebasticook to Newport; but in comparison with other roads, the quantity is rather below the average.—There are no expensive bridges on this section, and not a very large amount of masonry. The approach to the city of Bangor, is, I think, eminently favorable. It is all-important to a road connecting Bangor with the interior, that it should be able to reach the wharves at deep water, and thus discharge and receive freight at once, to and from the vessels. No other entrance into the city affords equal facilities. The valley of the Kenduskeag passes through the central part of the city, is of rapid descent and contracted width, and towards its mouth is lined with buildings and stores. And any road approaching from the north, must interfere with streets and buildings, and must cross the mouth of the Kenduskeag, before reaching the wharf accommodations at deep water, which are secured at once by the route we have surveyed.

The completion of this road in connection with the Androscoggin and Kennebec, and the Atlantic and St. Lawrence Railroads, secures an unbroken line of railroad communication, extending through an interior country rich in agricultural resources, and having an inexhaustible amount of water power for manufacturing purposes, and terminating at either end at a seaport renowned for its enterprize and successful commerce; thereby affording an excellent market for the produce of the country, in whichever direction it may be carried. And the completion of the St. Lawrence Railroad to Montreal, will undoubtedly bring upon the line of road we have been considering, a vast additional amount of business, in the transportation of nearly all the supplies of flour, &c., for the State of Maine, from the rich fields of the Western States, in preference to the more tardy and circuitous route by water, hitherto employed.

The charge of this survey was entrusted to Mr. A. W. Wildes, who has conducted it with much skill and ability; and to his valuable assistance in the preparation of the plan and estimates, I am also highly indebted.

The land damages upon this line must be very small. For a great part of the distance, it lies just back of the cleared lands of the farmers, and in passing through villages it interferes with very few buildings or house-lots. Indeed, in many places we were assured that the land would be freely given.

The estimates subjoined are based upon the line *actually run*, without making any deductions for the improvements of which the line is evidently capable. I am confident that a locating survey will considerably reduce the present estimate. As the proposed road from Belfast to Waterville will probably follow the same line for the first six or eight miles east of Waterville, this portion of the road might be built by either company and the use of it hired by the other.

The road-bed is to be 15 feet wide at top on embankments, and 25 feet wide at grade in the cuts, with the usual slopes of

1 1-2 to 1. The quantity of rock allowed for in the estimates is considered to be ample. The earth formations on the line surveyed, are generally clay or clayey gravel. The embankments considerably exceed the excavations, enabling us to lay the road-bed high above the surface; and as so large a share of the earthwork will be *borrowed*, the price will probably be less. No road, in a country so subject to the action of frost as this is, can be kept in good order without a copious dressing of sand or gravel. We find some reservoirs of this material, though not so frequently as would be desirable. It will be necessary to put on this dressing with an engine and cars after the track is laid, and for this purpose I have made an allowance of $1000 per mile.

The estimate for superstructure is for either an ⌶ or a bridge rail, weighing about 63 lbs. per yard, or 100 tons per mile; to be laid on cedar sleepers 8 feet long and 6 inches thick, placed about 2 1-2 feet apart from centre to centre. The rails to be secured at the ends by cast iron clasp chairs, weighing about 24 lbs. each. The price of rails is very variable, and if estimated at the current price now, it would be no standard three months hence. I shall at this time estimate them at $60 per ton, which, though higher than the present price, is certainly not above the average.

In regard to the running furniture of the road, I have made an estimate sufficient for a large business. For a few years at the commencement, a smaller amount will suffice, but the business of the road will rapidly increase, and after the connection with Montreal is completed, the stock of engines and cars must be very much enlarged.

The foregoing report, and the following estimates, are respectfully submitted by

Your obedient servant,

EDWARD APPLETON.

WATERVILLE, May 1st, 1848.

Reading [illegible]

This line is now a portion
of the Maine Central

G J C

Fencing will be required at present on less than half the distance — say 25 miles — at 75 cents per rod, or 480 dolls. per mile,	$12,000.00

Recapitulation.

Waterville to Sebasticook, grading, masonry and bridging,				$55,042.00
Sebasticook to Newport,	do.	do.	do.	129,550.00
Newport to Bangor,	do.	do.	do.	155,510.00
60 miles of Superstructure,				450,570.00
Buildings, &c.				15,600.00
Fencing and land damages, say,				20,000.00
				$826,272.00
Add 10 per cent. for superintendence and contingencies,				82,627.20
				$908,899.20

Equal to 16,756 dolls. per mile, on 54 1-4 miles.

Grading, masonry, and bridging, alone, will be equal to 6,269.00 dolls. per mile.

Estimate of Running Furniture.

5 Engines, at 7000 dolls. each,	$35,000.00
6 Passenger Cars, at 1,800 dolls. each,	10,800.00
3 Baggage Cars, at 500 dolls. each,	1.500.00
30 Freight Cars, at 300 dolls.	9,000.00
30 " " at 500 dolls.	15,000.00
3 Snow Ploughs, at 500 dolls.	1,500.00
12 Hand Bars, at 75 dolls.	900.00
	$73,700.00

Androscogin & Kenebeck R R
Hobart Clark was a director
and the building agent
during its Construction.

Was an assistant Engineer
during the whole time it
Was building

G T C

See Page 6"

Was Employed on this
Road during its building
nearly three years G. T. C.

See Page 21"

REPORT

OF THE

PRESIDENT AND DIRECTORS

OF THE

ANDROSCOGGIN AND KENNEBEC

RAIL-ROAD COMPANY,

now a part of the Maine Central

TO THE

STOCKHOLDERS,

~~MAY~~ July 3, 1849.

MAXHAM'S PRINT......'MAIL' OFFICE, WATERVILLE.

DIRECTORS' REPORT.

TO THE STOCKHOLDERS of the Androscoggin and Kennebec Rail-Road Company, at their Annual Meeting at Winthrop, on the 3d of July, 1849,

The Directors respectfully report—

THAT the Charter was granted on the 28th of March, 1845, with a capital stock of 10,000 shares, since increased by an Act of the Legislature to 14,000—an amount deemed quite sufficient for all the wants of the Company. The Company was organized on the 5th day of March, 1847. A large portion of the stock was taken up by persons living on or near the road. Before the Company was organized, and, shortly before that time, at a numerous meeting of the stockholders and friends of the road, it was determined, that contracts for grading and bridging the whole road should be entered into about the same time; so that the whole road might be completed at nearly the same period. The stockholders at the easterly end being unwilling to pay in assessments on their stock to be expended in commencing and finishing the western portion of the road, and the stockholders at the western end being alike unwilling that their money should be expended in finishing a part at the eastern end, the Directors therefore felt themselves constrained to make contracts for grading and bridging the *whole* road. At the same time, they were sensible, that some persons, ignorant of the peculiar circumstances, would deem it imprudent to make such contracts, so much beyond the amount of subscription, and to trust to other means for the purchase of the iron and equipment of the road, which it might or might not be in their power to provide. Other circumstances, also, which need not be particularly recounted, but which are well known to the stockholders and friends of the road, seemed imperiously to require, that the building of the whole road should be commenced. In conformity with this universal expectation on the part of the stockholders and of the public, the Directors made contracts for grading and bridging that part of the road, between the Junction with the At. & St. Lawrence Rail Road at Danville, and Lewiston, to be completed in June, 1848; and, from that place to Winthrop village, by the 1st of October of the same year; from that point to Waterville village, by the 4th of July, 1849. Under these contracts, ground was first broken on that part between the Junction and Winthrop, on the 17th day of July, 1847, and on the other part, on the 25th of October of the same year.

The part between the Junction and Lewiston was opened for public travel on the 4th of December, 1848, and has since been run by the At. & St. Lawrence Rail Road Company, by a joint agreement of the two Companies, which will cease on the 9th of July, 1849; at which time, that part of the road between the Junction and Winthrop will be opened and run by this Company. The residue to Waterville, it is expected, will be opened in October next. From this statement, it will be perceived, the Directors were obliged seasonably to make contracts for the iron, to be laid down on the whole road, and for the Locomotives, Cars, &c., necessarily involving all the expenditure requisite for completing the road, and furnishing its equipment. It is very possible the road might have been constructed somewhat more economically, considering the difficulty of raising the necessary additional funds, if more time could have been taken for this purpose; but the exigency imposed on the Directors, of entering into contracts for grading and bridging the whole in the outset, seemed to require, that the work should be completed, and the whole road opened for public travel as soon as possible, in order to make the great outlay in grading and bridging profitable to the stockholders.

As was stated in the Directors' Report to the stockholders, at their last annual meeting, they found it necessary in March, 1848, to raise more money than could be realized from assessments on stock, and for this purpose, proposed to issue Bonds, to the amount of $200,000, to be repaid in four years, unless the Bond-holders should choose at the end of three years to take stock at par instead of money; they to receive six per cent. interest, to be paid semi-annually, and a yearly, additional sum of six per cent. payable in stock at par—the iron, and use and income of the road between the Junction and Winthrop being pledged to them as collateral security. This loan was approved by the stockholders at their last annual meeting, and they were then distinctly told by the Directors in their report, that further sums of money must be raised to meet the contracts of the Company. The stockholders, however, did not adopt or recommend any mode for this purpose, but passed a vote, "That the whole subject of increasing the subscription to the stock of the Company, and the ways and means of obtaining funds to complete the road, be referred to the Board of Directors, with full power and authority to act in the premises, as they may deem most for the interest of the Company." Immediately afterwards an effort was made, in accordance with what was understood to be the wishes of the stockholders at this meeting, to get additional stock, to the amount of 200,000 dollars, taken up by stockholders, which proved a failure. The Directors, considering themselves as not only authorized but required to devise such measures for meeting the wants of the Company as the exigency of the case should from time to time require, on the 26th of July, 1848, offered to issue Bonds to those who would take them, to the amount of 350,000 dollars, on the same terms as in the 1st loan--the bond holders to be secured by a pledge of the iron laid down on the road between Winthrop and Waterville, and the use and income of the same, as collateral security. These Bonds have been all agreed to be taken--227,163 dollars having been already paid into the Treasury, and the balance is to be paid in the course of the present month. They would respectfully ask the stockholders to ratify the doings of the Directors, in procuring the Bonds to be taken up.

It was deemed expedient to call a special meeting of the Stockholders at Lewiston, on the 24th of May last, to devise and adopt ways and means of increasing our funds. At this meeting, a full report of the condition and progress of the road and of the state of our finances, was made by the Directors. The plan adopted was, that each stockholder should have a right and should be asked to subscribe for additional stock to the amount of 50 per cent. of the stock owned by him, and that the nett earnings of the road, after paying the interest on the Bonds, should be applied to the payment of four per cent. semi-annually to the holders of this stock, until the nett earnings of the road shall be sufficient to pay an interest of seven per cent. on the whole stock—the subscription not to be binding, unless at least 200,000 dollars should be subscribed. Efforts have been made to get stock taken up on these terms, but the amount falls short of the sum required—not exceeding 500 shares having been taken up—and it remains for the Stockholders, at this meeting, to adopt such measures for supplying the wants of the Treasury, as they may deem best. The Directors cannot, for a moment, doubt the ability and inclination of the Stockholders and friends of the road to adopt efficient and speedy measures to raise the necessary funds to complete the road. They will recollect that the effect of completing and opening this road will be to reduce freight, to give them access to a market for their products and manufactures at all seasons of the year, winter as well as summer, to give them more for what they have to sell, and to reduce the price of what they have occasion to buy, and to enhance the value of the lands, increase their wealth, and reduce the cost of living.

The length of the road, from the Junction to the Depot near the bank of the Kennebec river in Waterville village, is 55 miles. There have been thirty-three contracts for grading and bridging; and it is but justice to the contractors to say, that the work has been carried on with energy, ability, and fidelity, with very few exceptions. To show what has been accomplished, and what remains to be done, the Road may be divided into three divisions. The first extends from the Junction to the west side of Androscoggin river, six miles; the second from that place to Winthrop village, twenty miles; and the third to Waterville village, twenty-nine miles. The amount of work done on the several divisions, to June 1, 1849, is as follows:—

1st Div.	Earth	336,184	cubic yds.
	Ledge	22,172	"
	Masonry	4,140	"
2d Div.	Earth	625,946	"
	Ledge	17,499	"
	Masonry	7,731	"
3d Div.	Earth	815,354	"
	Ledge	28,800	"
	Masonry	17,088	"

The whole am't of grading and masonry on the 1st of June—

Earth	1,777,484	cubic yards.
Ledge	68,471	"
Masonry	28,959	"

And to complete the road ready for the superstructure requires—

Earth	180,000	cubic yards.
Ledge	4,500	"
Masonry	1,000	".

Being less than 1-10 of the Earth, 1-16 of the ledge, & 1-30 of the masonry.

The opening of the road from the west side of Androscoggin river to Winthrop was delayed several weeks by the sinking swamp in Greene. The extra cost by the sinking of the piling and embankment at this place will not exceed $10,000. Great credit is due Mr. George T. Clark, one of the Engineers, for the vigor, good judgment and perseverance he displayed in filling up and making passable this breach, that at one time threatened to cause the opening of the road to Winthrop to be delayed till next September.

Six considerable bridges have been built. Two over the Emerson Stream, in Waterville, and one over the Belgrade Stream; these are each about 150 ft. in length. One over the Little Androscoggin, 160 ft. in length; one over the Narrows in Winthrop Pond, 620 ft. in length; and one over the Androscoggin at Lewiston, 820 ft. in length. These are all substantial structures, and built on the most approved plans.

Lands for depots and stations have been made and buildings erected as follows, viz.:—at Auburn, about 3 acres of land; an engine house, 80 ft. by 60, enclosing a turn-table 26 feet in diameter, and having accommodations for 3 engines; a building for passengers and freight, 180 ft. by 36 feet; wood shed, 52 ft. by 26 ft; machine shop, 100 ft. by 35 feet; car shop, 80 ft. by 35 feet. At Greene, about an acre of land; a building for passengers and freight, 50 ft. by 20 feet; and a wood shed 200 ft. by 26 ft. At Leeds, an acre of land; a building for passengers and freight, similar to that at Greene. At Monmouth, about an acre of land, and a building of the same description as the last. At Winthrop, about 3 acres of land; a passenger station, 50 ft. by 20 ft.; a freight depot, 150 ft. by 35 ft.; wood shed, 100 ft. by 26 ft.; and engine house, 40 ft. by 50 ft. At Readfield, about an acre of land; a passenger station and freight depot similar to those at Winthrop. At Belgrade, about an acre of land, and a building for passengers and freight similar to those at Greene, Leeds, and Monmouth. At North Belgrade, an acre of land, and a building for passengers and freight, 30 ft. by 20 ft. At West Waterville, about two acres of land; a passenger station, 30 ft. by 20 ft.; a freight depot, 120 ft. by 35 ft.; and a wood shed, 100 ft. by 26 ft. At Waterville, about six acres of land; a passenger station, 120 ft. by 32 ft.; a freight depot, 250 ft. by 35 ft.; wood shed 200 ft. by 26 ft.; and a part of a circular engine house.

For a statement of the operations of the Treasury, and the receipts and disbursements up to the 18th of June, 1849, together with a schedule exhibiting the sums distributed over the several departments of expenditure, the stockholders are respectfully referred to the accompanying Report of the Treasurer. From this it will be seen that the whole amount paid into the Treasury up to the time above mentioned, was 937,754.75 dollars, and the amount of disbursements up to that time was 927,780.77 dollars.

In May, 1848, the Company purchased in England 2800 tons of iron of the bridge pattern, weighing 63 lbs. to the linear yard, at 43 dollars per ton, to be paid on delivery in Portland —the wharfage and duties to be paid by the Company. All this iron arrived in time to be laid down on the road, and has been paid for, as well as the duties—costing the Company 53 dollars per ton. Another lot of iron of 3000 tons, of the same kind, was contracted for, in August, 1848, at 36.75 dolls. per ton, to be paid for on delivery—the wharfage and duties being paid by the Company. All this iron was shipped for Portland and Bath early in May last. Some part of it has arrived, and the residue may be expected in a few days. It will cost the Company, including wharfage and duties, 45 dollars per ton. The cost of the iron for the whole road, including wharfage and duties, is 323,900 dollars, or 5,889 per mile.

Annexed is a Table, showing the estimated amount of the several items of cost of the road, the amount paid out on each, and the balance still to be provided for—made up as of the 8th of May, 1849. From this it will appear, that, after deducting what may be realized from stock and bonds, the sum of 311,773 dollars remains to be provided for. The whole cost of the road, in running order to Waterville, with sufficient equipment for the commencement of business, will not vary much from 1,350,000 dolls. The general impression is, that this very considerably exceeds the cost of the road as estimated when the enterprise was first commenced; and this impression, it is believed, took its rise in the Report of James Hall, Esq., of Portland, a competent and experienced Engineer, who, after a reconnoisance and partial survey, in August, 1845, estimated the cost at 1,051,020 dollars. This estimate, however, is for a distance of 49 3-4 miles, which would give 21,136 dollars as the cost per mile.

The actual length of our Road is 55 miles of main track, with 3 miles of side track, making 58 miles, which, at the same rate per mile, would be 1,225,888 dolls. Deducting from this 1,500 dolls. per mile, for the reduced cost of iron, and we have 1,138,888 dolls. To this add 1000 dolls. per mile, for fencing and land damages, which were not included in Mr. Hall's estimate, and a larger equipment has been contracted for than he contemplated, exceeding his estimate by 14,600; so that, with the addition of these items, and an allowance for the increased length, the cost of the road, according to Hall's Report, as thus revised, would be 1,208,488 dolls. The cost of the road, then, as we estimate it, will exceed his estimate by the sum of 141,596 dolls. When we consider the magnitude of the undertaking, the important bridges that have been constructed, the deep cuts through different ledges in Danville, Greene and Winthrop, and the sinking swamp in Greene — expenses which could not have been fully estimated upon such a reconnoisance as that made by Mr. Hall—we believe the actual cost will not exceed the first estimate so much as is common in such cases. To these considerations may be properly added, that, when the first contracts were entered into in 1847, provisions and labor were unusually high; and that the Company, owing to misrepresentations, which had been spread broadcast through the land, had little credit or confidence—thence the contracts for grading and bridging, west of Winthrop, were very considerably less advantageous to the Company than those made east of that place. It is seldom that any railroad in New England has not cost more than the first estimate. In the first annual Report of the Directors of the Boston and Worcester Railroad, in 1832, it was estimated that the road would not cost over 1,000,000 dollars; but this road, which is only 44 5-8 miles in length, had cost, at the end of 1836, 1,582,793 dollars; and yet this road has been among the best managed, and is among the best paying roads in New England.

A contract for transporting the mail over our road, from the Junction to Winthrop, once a day on each day except Sundays, has been made with the Post Office Department, to commence on the 1st inst., at 2,025 dollars a year. It is probable that, when our road shall be opened to Waterville, the contract for carrying the mail may be extended from Winthrop to that place.

All the statements made in this Report are to be understood as referring to a period up to the 19th of June, 1849, unless where some other time is expressly mentioned.

It must be borne in mind, that this enterprise was begun and has been carried on in the face of a systematic determination on the part of a portion of the people, whose interests were supposed by them to be injuriously affected, to interpose every obstacle in their power to its progress and completion. But these difficulties have been resolutely and successfully met and overcome by the Stockholders and friends of the Road; and we feel the strongest assurance that it will be completed in quite as short a time as its most sanguine friends ever anticipated, and that the money expended will prove a safe and profitable investment.

T. BOUTELLE, PRESIDENT,
JULY 2, 1849. *In behalf of the Directors.*

(Harvard, 1800.)

TREASURER'S REPORT.

TO THE STOCKHOLDERS OF THE ANDROSCOGGIN AND KENNEBEC RAIL-ROAD COMPANY.

Gentlemen:

In compliance with the by-laws of the corporation I submit my second and last annual report, exhibiting the transactions connected with the Treasury Department during the last year, and its condition at the close thereof.

The whole amount of Stock subcribed is $465,350 00. The stock is held in four thousand six hundred and thirty shares, and forty-seven fractional shares. Of the shares into which the stock of the Company is divided, fifty-three and one half are owned by the company.

During the year, there have been sold for the nonpayment of assessments, six hundred and fifty-one original shares. Of this Stock thus sold at auction, three hundred and sixty two original shares were bid in for the Company, of which number two hundred and seventy-one have been re-sold to various individuals.

The total amount of deficiencies on sale of Stock, is $8,113 75. This sum, by the re-sale of Stock bid in by the company at a price in advance of that for which it was bid off, is reduced to the sum of six thousand, eight hundred and four dollars, and twenty-five cents, which is the actual loss the company will suffer, supposing nothing of the $8,113 75 is ever collected. It is, however, the opinion of the undersigned, that, at least two thousand dollars of that sum may be realized, if suitable measures be adopted to collect the same—which will reduce the actual loss on Stock to $4,804 25

On the Stock owned by the company, as above mentioned, $2,999, are due on assessments. Of this Stock thus owned by the Company, it is believed that one half, at least, will be redeemed by the original subscribers, if allowed to do so.

The condition and amount of the Stock of the Company then, is as follows;—

Whole am't of stock actually subscribed, including am't held by the Company,		$465,350
Am't pd on ass'ts per last annual report,	$201,197 97	
Am't collected during the past year	235,905 63	
Am't due and uncollected on ass'ts,	18,443 15	
Am't of deficiency on stock	6,804 25	
Am't due for ass'ts on stock owned by Co.	2,999	
	465,350 00	$465,350

To which amount ($465,350) of stock now actually subscribed on the books of the Company, is to be added $40,350, the estimated amount agreed to be taken by contractors, in part payment for the various departments of labor on the road, and for equipping the same; and the whole stock of the Company will be, when the contracts are completed, $505,700.

The receipts for the last year have been from stock,	$235,905 63
From the Bonds of the 1st Loan,	189,944 69
" " 2d "	227,163 62
" Banks on temporary loans,	72,610 95
" miscellaneous sources,	3,932 56
" stock, as per last annual report,	201,197 30
" Bonds,	7,000
	$937,754 75
The payments for the last year amount to	725,314 13
The am't expended per last year's report,	202,466 64

Schedule A exhibits this sum, distributed over the several departments of expenditure.

The resources of the Company, so far as known to me, are as follows:

The am't due on assessments on stock,	$18,443 15
Am't due for deficiencies on sale of stock, to be realized from which, say	2,000
Am't due on notes taken for assessments,	9,100 70
" taken for property sold,	130
" on the several loans—Loan 1st,	3,000,
Loan 2d,	122,836 38
Cash on deposit,	1,147 96
	$156,658 19

Of the indebtedness of the Company, I can speak with certainty only so far as it is based on orders drawn by the committee appointed for that purpose, and so far as notes have been given.

Am't due contractors on orders drawn,	$52,901 49
Notes payable, maturing at different periods,	36,905 34
Due for coupons not presented,	610 69
	$90,417 52

Now that the collection of assessments on Stock, is so nearly closed, it may be interesting to you, to state briefly, the expenses incurred in procuring, consolidating, collecting and disbursing the Stock of the Company; the amount of which, I have already stated to be $465,350. The expenses in procuring the Stock were $1,304 14. Those attending the consolidation, collecting and disbursment of the same, have been $7,397 34, making the total amount of expenditure for the above items $8,701 48. It will be remembered that this sum covers the whole expense of the Treasury department, and all the expenses incurred in efforts to procure new stock, and in the disbursement of all money passing through the Treasurer's hands up to the date hereof. This, it will be perceived, is a fraction less than two per cent. on the am't received on stock, and a fraction more than one and one-half per ct. on the whole amount of stock of the Company.

EDWIN NOYES,
Treas'r A. and K. Rail Road Co.

June 18, 1849.

SCHEDULE A.

DEPARTMENTS.			DEPARTMENTS.		
Preliminary expenses	$1,336	99	Passenger and baggage cars	3,115	00
Incidental	19,372	13	Gravel cars	8,717	12
Salaries	8,779	30	Depot expenses	803	29
Engineering	27,579	32	Wood account	3,776	51
Bridges and bridge masonry	72,217	80	Grading, culverts and masonry	464,902	29
Land and land damages	25,791	52	Track repairs	1.952	61
Stations, machine shops, &c.	11,142	66	Transfers of half shares and interest	17,780	66
Fencing	9,360	70	Banks for loans	58,233	52
Superstructure, including graveling	187,381	60		$927,780	77
Locomotives	8,437	76			

TABLE,

Showing the estimated am't of the several items of cost of the Road—the am't paid out on each, and the balance still to be provided for. Prepared by the Engineer and Agent. Referred to on page 7 of Report.

Whole am't of arading, masonry and bridging, glready estimated,		$630,038 13
Balance to complete the work,		67,400
		697,438 13
Already paid on above,		518,448 07
		178,990 06
Deduct payment to be made in stock,		23,550 00
Balance to be paid in cash,		155,440 06
Superstructure from Junction to Winthrop village, including rails, chairs, spikes, sleepers, distributing materials and graveling,		211,735 08
Already paid on above,		171,217 08
		40,515 00
Deduct payment to be made in stock,		1,300 00
Balance to be paid in cash,		39,218 00
Engines, passenger, baggage, merchandize and gravel cars, built or contracted ior,		74,642 85
Already paid on above,		14,492 85
		60,150 00
Deduct payment to be made in stock,		14,700 00
Balance to be paid in cash,		45,450 00
Land, including line of road, depot grounds, wood lots, gravel hills, &c. and already paid as per Treasurer's account,		26,547 15
Required for cases not settled,	4,652 66	
Land not required for Co.'s use, which may probably be sold,	3,700 00	
Balance to be paid in cash,	952 66	

Fencing.—Already paid as per Treasurer's account,		9,174 60
To be paid to sundry contractors,	15,478 00	
Deduct payment to be made in stock,	600 00	
Balance to be paid in cash,	14,878 00	
Depot buildings and fixtures, already paid as per Treas'r's acc't,		8,870 87
Jones's contract,	19,200 00	
Engine house at Waterville,	3,500 00	
Two turn-tables, $2,800 ; and foundation for buildings, $1000,	3,800 00	
	26,500 00	
Deduct payment to be made in stock,	3,400 00	
Balance to be paid in cash,	23,100 00	
Superstructure from Winthrop to Waterville, including rails, &c. as western half of road,	211,735 00	
Deduct reduced cost of rails, 3000 tons at $9,	27,000 00	
	238,735 00	
Add for two miles extra length,	16,000 00	
	200,735 00	

RECAPITULATION.

Balance required in cash for grading, masonry and bridging,		$155,440 06
Superstructure to Winthrop,		39,218 00
" from Winthrop to Waterville,		200,735 00
Engines, cars, &c.		45,450 00
Land damages,		952 66
Fencing,		14,878 00
Depot buildings and fixtures,		23,100 00
		479,773 72
Due Ticonic Bank,	11,000	
Interest due to stockholders, July 1st, 1849,	21,000—	32,000 00
		511,773 72

RESOURCES.

Due on 1st loan,	4,000	
" 2d "	135,000	
" stock—say,	40,000—	179,000 00
		332,773 72

The character of the road, in regard to curvature, is very favorable ; the speed of the trains will be but slightly diminished in passing the sharpest curves employed. Of the whole length of Road, 37 miles consist of straight lines, 8 1-2 miles of curves of 5000 ft. radius, and the remainder of curves varying from 1900 ft. to 4000 ft. radius.

As to grades, also, the character of the road may be regarded as very good. The maximum rate of inclination allowed upon the road is 39.6 ft. per mile. Of the whole length, 13 1-4 miles are level : the grades of the remainder vary from 13 ft. to 39.6 ft. per mile. The longest continuous ascent at the maximum rate is 2 1-2 miles, between Winthrop and Monmouth.

It is apparent, therefore, that our road must hold a very high rank among the roads of New England, in respect of grade and curvature ; and by reference to the Massachusetts Railroad reports, it will be found that very few of them can be said to surpass it.

The road-bed is graded for a single track, except at stations, where it is made wide enough for two or more tracks, as may be deemed necessary. The masonry of some of the bridges and culverts is built with reference to a second track; but in general the operations are confined merely to what is requisite for a single track.

May 8, 1849.

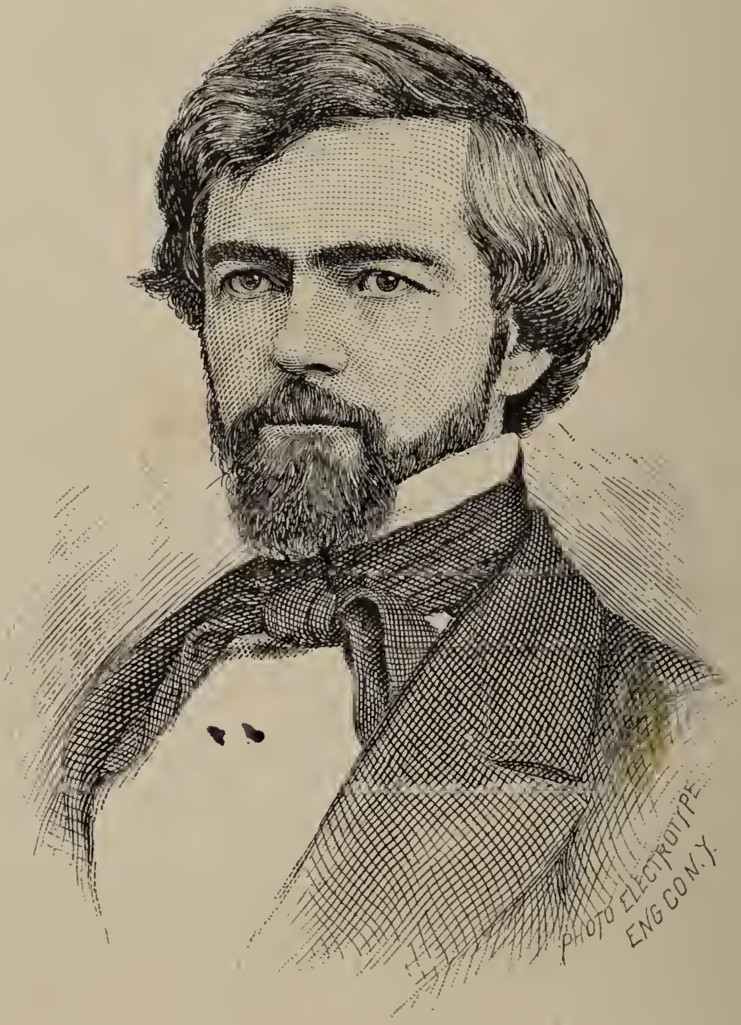
PHOTO ELECTROTYPE ENG. CO. N.Y.

MAJOR GEN'L ISAAC I. STEVENS.

FIRST GOVERNOR OF WASHINGTON TERRITORY.

Born in Andover Mass
March 25 1818

Isaac Ingalls Stevens

Andover's Gallant & Gifted Son

The following papers relation to the North West. and the Northern Pacific R R were presented to me at the time they were published by their author, who made the first explorations of this now great Continental Road. I place them here as a small token of respect to his memory, as we were both natives of Andover born the same year, in the same school district educated at the same schools until his appointment to U S Military Academy at West Point in 1835

young companions almost
a prodigy and this was
noticed all through his preparatory
school life. and before the expiration
of his first year at West Point
he was acknowledged as
the first scholar in his
class. a position he
maintained to the
last. His class mate
Genl Thom said of him
that he was the hardest
worker in the academy
which was a characteristic
of his whole life

His tory has not done
him justice

G. J. e

ADDRESS

Hon.
was present when
Gov Stevens delivered this
address G. I.

ON

THE NORTHWEST,

BEFORE THE

American Geographical and Statistical Society,

DELIVERED AT NEW YORK, DECEMBER 2, 1858,

BY

Gen. **ISAAC I. STEVENS**, native of Andover Mass,
Fell in the battle
of Chantilly Sept 1st 1862
Born March 25th 1818

The Northern Pacific R R Line,
Completed Sept 8th 1883

WASHINGTON:
G. S. GIDEON, PRINTER.
1858.

Gen Stevens was very indignant that the Government at the beginning of the war would give him nothing better than a ~~Colonel~~ Col. A friend of mine happened to be with him when he went to Washington to take command of his regiment. He said I will give the ~~[illegible]~~ Government to understand that I am worthy of something better or I lay my bones on the battle field.

He had in his brigade in South Carolina the 8th Mich of whom one [illegible] proved. I knew the Regiment well. The Col and many of its officers were my friends & neighbors. After the battle of Wilmington in which the Reg lost a good many and killed some very noble of my friends ([illegible]) the next day (by the way they took the city) & after dark he heard some noise on the street & [illegible] passing along (What is the matter [illegible] the [illegible] soldiers [illegible] the army ([illegible] he belongs) 8th Mich. Let him go. Let him go says the Gent on 8th Mich [illegible] been in [illegible] he got drunk today.

ADDRESS.

Mr. President and Gentlemen of the
American Geographical and Statistical Society:

Ladies and Gentlemen: The northwest portion of the American Continent has of late, and is now, attracting much attention. It has hitherto, except a portion of our own domain, been considered only a great hunting field, rich in furs, and capable of furnishing wealth and influence to a trading establishment. The history of this domain, though meagre, is interesting. The coast was explored in the latter part of the last century by American, English and Spanish navigators. A Boston shipmaster gave name to the Columbia river and to Gray's harbor, between that point and Cape Flattery. A Spanish navigator gave name to the Straits de Fuca, and other points in the vicinity; and British navigators gave name to Vancover's island, and to other points of the adjacent waters and coasts.

Although two centuries since the Jesuit missionaries penetrated to the Northwest from the Mississippi, it was not till towards the close of the last century that the Northwest Company and the Hudson's Bay Company pushed their explorations to the frozen ocean and to the Pacific, in about parallel 52.

About this time they established posts over all this extensive country. The explorations of Lewis and Clark at an early part of the present century, made known to us the two great rivers across the continent—the Missouri and the Columbia—and the general character of the country. They were soon followed by the American trappers and traders, who planted establishments to, and beyond, the Rocky mountains.

The efforts of John Jacob Astor to found a great trading establishment on the Columbia, and to make tributary to it the whole western slope, by a system of posts, through misfortunes of various kinds, failed, and the whole of that country, as well as the country northward to Hudson's bay, and stretching from the Pacific to the great lakes, came under the control of a *foreign* company. Thus, so far as concerned the agencies at work to develop the country, the American people had control simply of the portion east of the Rocky mountains, and another jurisdiction, acting through a company whose interest it was to keep the country a desert, to keep it in a condition in which it would be remunerative in its furs, had control of the entire remaining portion of that country.

I will in this connection refer to the treaty of 1846, by which a line was established between the two countries, and to a remark made about, or previous to, that time in the British Parliament, to the effect that so great was the distance from the American settlements to the Pacific, and so serious were the difficulties to be encountered, that it was idle and preposterous to suppose the American States could colonize the Pacific coast. At the very time this confident assertion was being made, our emigrant wagons were moving over those mountains, and that same fall American citizens had carved out their homes on the shores of the Pacific ocean, and raised above them the stars and stripes of their country's power. The fact thereby became established, that that western coast was ours by the natural process of colonization, and that American genius and enterprise could scale the Rocky mountains and overcome every difficulty lying between the valley of the Mississippi and the Western ocean. From that time the way was thronged with the emigrant wagons of our people, who went on the long distant journey with their women and their children. From that time did that country become known to us as a civilized community; as a community of families; as a community which would have a great part yet to play in the destinies of the country and of the world.

Time rolled on; California was acquired, and its immense mineral riches became known. Oregon, which had been healthfully and rapidly settling, became stationary. Many of her people went to California to dig for gold. Emigration was turned overland to California, and she became a great centre of attraction, not only to the people of the States, but to the people of other countries. This stationary condition of Oregon, however, continued but for two or three years, and then she greatly increased in population. Gold was found in Southern Oregon, and large numbers of miners found remunerative employment there. The northern portion of Oregon was organized into a separate Territory, the Territory of Washington.

Within the last four or five years rumors had spread abroad that gold was to be found in Washington and in the British possessions to the north. The country was more or less *prospected* in each year, and this year we find its mineral wealth is attracting the attention of the civilized world. We find that both in Washington and in British Columbia, facts exist, which establish the extent and richness of their gold diggings.

This seems therefore to be an opportune moment for presenting in a careful and deliberate manner the geography, resources, and ultimate development of that entire region.

This is the object which I propose by my address of this evening. I shall endeavor to do this with all the dispassionate judgment that I can command. My purpose is not as the partisan, to set forth the advantages of a particular section of country, but to present that section fairly and candidly, both in its relation to the countries north and south, and the great connections east and west. To facilitate the investigation of this whole subject, I have had prepared a map on a large scale, giving the entire northern portion of the continent from the parallel of San Francisco and Washington city to Hudson's bay. On this map I have exhibited the mountain ranges, the great navigable streams, the practicable passes and the principal prairie regions. Looking on that map, your attention is arrested first by the great mountain chain from which flow waters to either ocean. Following those waters, you observe great rivers having long, distant courses before they reach the Gulf of Mexico, Hudson's bay, the Frozen ocean, and the Pacific ocean. Observe especially those two great rivers, the Missouri and the Columbia; follow them up to their upper tributaries, and you will find that they interlock in the very heart of the Rocky mountains. You will find that from the head of steamboat navigation of the one river, to the head of steamboat navigation on the other, the distance is but inconsiderable compared with the entire distance across the continent. There is Fort Benton, 2,415 miles above St. Louis. To this point you can take steamers seven months in the year, carrying 150 tons of freight, and here at the mouth of the Palouse, on the great southern tributary of the Columbia, Snake river, you come again to waters navigable by steamers. The distance from the head of steamboat navigation on the Missouri, to the head of steamboat navigation on the Columbia, is but 450 miles.

There are other streams, second only in importance to the Missouri. The two branches of the Saskatchawan, that have their sources also in the Rocky mountains, north of the Missouri, stretch a great distance eastward to Lake Winnipeg, and find their way northward into Hudson's bay. They connect also with the main Columbia itself, affording transit for passengers and freight many months of the year; and thus the Columbia river and the two branches of the Saskatchawan have been the great lines of travel of the Hudson's Bay Company. It is through that country they have established their many posts. I propose in this connection simply to refer to these streams geographically. In another part of my address I shall refer to them more as avenues of travel and of commerce.

The Mississippi has also its source in this region, furnishing with its tributaries a long course of waters navigable by steamers, and affording a very close connection both with Lake Superior and the Red river of the north; and the Red river of the north, flowing northward, and in a direction opposite to that of the Mississippi, is also navigable within our own borders several hundred miles for steamers, and makes the connection between our own system of rivers and those which flow into Lake Winnepig and Hudson's bay.

But the great feature of the northern portion of the American continent is the water line of the great lakes, which stretch more than half way across from the Atlantic to the Pacific; a fact of deep significance, when we consider that vessels, without breaking bulk, can pass thence to Europe, either by the Canadian canals and the St. Lawrence, or by the New York canals and the Hudson.

Thus, then, we find that the country which we are describing, geographically, is one of great natural water lines across the continent—the great lakes, the Mississippi, the Red river of the north, the Missouri, the two branches of the Saskatchawan, and the Columbia. If we look to the extreme southern portion of the country under consideration, we find it deficient in navigable streams. After leaving the Missouri, its tributaries in the vicinity of the route, the Kansas, the Platte, and the Running Water, are unnavigable; and we do not come to navigable streams again until we have crossed the Sierra Nevada, and gone far down into the valley of the Sacramento.

I need not refer particularly to the mountain chains which characterize this country—the Sierra Nevada of California, and the Cascade mountains of Oregon and Washington, stretching far to the northward: the Rocky Mountain chain, having a vast extension in the parallel of San Francisco and Washington city, and to the northward of the South Pass, and then greatly diminishing in breadth still further north, until it passes beyond the 49th parallel into the British possessions. Again, there are, intermediate between these two great chains, many subsidiary chains, branching off from the Sierra Nevada, the Cascades, and the Rocky mountains, which need not be more specifically referred to.

Another peculiarity of the country of the Missouri and the Columbia is, that on the eastern slope the prairie region extends to the very base of the Rocky mountains. On and northward of the railroad line, from Fort Union along the valley of Milk river to Fort Benton, there are no upheavals, with the single exception of the Three Buttes, which rise out of the prairie just under the 49th parallel, three thousand feet high, about 100 miles eastward of the Rocky mountains.

If you look to the Rocky Mountain region, between the 46th and 49th parallels, you will find that it is essentially a country of prairies. West of the Bitter Root chain of mountains, a great plain stretches to the Cascade mountains, on the west, and from the 48th to below the 46th parallel. This prairie region is, for the most part, well watered, well grassed, and furnishes a large portion of arable land.

One other feature remains to be considered in the geography of this country, and that is, the two great ports on this coast, San Francisco and Puget's sound. San Francisco is the great port of California, and must ever be a great key-point of business and commerce. But Puget's sound is admitted by all naval and military gentlemen who ever visited its waters, to be the most remarkable roadstead on the shores of any ocean. It has 1,600 miles of shore-line and great numbers of land-locked, commodious, and defensible harbors. It can be entered by any wind, is scarcely ever obstructed by fog, and is the nearest point to the great ports of Asia of any harbor on our western coast.

With this brief statement of the geography, I will now consider the resources of this country; and at this stage of the proceeding, I am reminded of the discussions, which have occurred within twenty years, in which that country has been pronounced an inhospitable, cold, and barren country, fit only for Indians, wild beasts, and hunters. Why, sir, the climate of Puget's sound is milder than that of New York. You never find ice on its surface, or snow for more than a few days at a time on its shores; and our good friends in San Francisco have to go north to the Russian possessions to get ice. The resources of Puget's sound and the country on the Columbia river and on the Willamette are literally inexhaustible. The whole country in either territory west of the Cascade mountains has, for the most part, a fertile soil, a climate so mild through the winter that cattle do not require fodder, and seed can be sown from September to March; and then we have the glorious summers, which enable us to gather our crops without fear that they will be injured by rain. The forests on Puget's sound are a great source of wealth. At this time there are on that sound nine large steam-mills and many water-mills in operation, manufacturing lumber, and several large spar establishments. Seventy-five millions of lumber are now manufactured a year, more than half of which is sent to foreign ports. Spars are not only sent to Asia, the Sandwich Islands, and Australia, but to the navies of France and England; and they have been pronounced by the inspectors to be the best spars they ever saw ; and yet the lumber and spar business is in its infancy.

Within one mile of the shores of Puget's sound, there is more timber than can be found on all the tributaries of all the waters of the State of Maine.

On the coast there are extensive fisheries of cod and halibut, which stretch from the mouth of the Columbia river to beyond Vancouver's island.

This portion of our coast also abounds in whales, and a single little tribe of Indians, the Macaws, at Cape Flattery, with their rude means, have produced 30,000 gallons of oil in a single year.

On the eastern shores of the sound, and on the Straits de Fuca, there is coal which has been pronounced by experts to be adapted to river steamers, and the opinion has been ventured that it will answer for ocean steamers, though this has not been tested.

The country also abounds in water-power near to navigable waters, with all the conveniences to apply it to manufacturing and mechanical purposes with economy and success.

From the Cascade mountains to the Rocky mountains there is a vast pastoral and agricultural region.

Looking on this map I point out to you the Yakima country, admitted by all to be a good grazing country. In the portion immediately north of the Columbia, there is a single tract of 2,000 square miles of arable land.

I will take you to the Walla-Walla valley, which, from this height, (near Wild-horse creek,) presents as pleasant a landscape as one's eyes ever beheld. Here is this beautiful valley before you, its streams lined with cottonwood, the neighboring mountain spurs covered with pine, giving you the most delightful picture of what it will be, when it becomes settled and occupied. You can see in imagination cities and villages along these streams, the village school and the church-spire. Nearly the whole of this country, between these mountains and Snake river, is an arable country, and nearly one half of it is adapted to small farms. This valley, or rather re-entering of Snake river, is the great key of our interior, and can subsist a farming population of 100,000 souls.

The country west of the Bitter Root, and north of Snake river, and thence extending westward nearly to the meridian, passing through the mouth of the Palouse, has a fertile soil, adapted to wheat, cereals, and vegetables. As regards the portion west of this meridian, it is somewhat affected by drought, and is more of a grazing than an agricultural country. On the line of the Columbia, on the shores of many of the streams and lakes, and in many intervening swales and valleys, tracts will be found where there is land enough to supply the grazing population, which that country is able to support.

The country north of the Spokane, and thence to the 49th parallel, is wooded, and a very considerable portion of it is arable. The Bitter Root mountains are covered with heavy timber—pine and fir, and larch and cedar. I do not wish to be thought to speak as a sanguine man, when I dwell on this country between the Bitter Root and the Rocky mountains, known as the Flathead country. If you look to the isothermal lines which are drawn on this map, you will see that there is nothing in the condition of the temperature to prevent the raising of crops. But we have the practical experience of the few settlers, and of the Jesuit missionaries in that country, to establish the fact both of the certainty and of the goodness of the crops. I estimate that in the Flathead country, and along the eastern slopes of the Rocky mountains, the amount of arable land is at least one-third of the whole, and that it will be found to exceed 12,000 square miles. The country from the Rocky mountains to the great rivers running to the Gulf of Mexico and Hudson's bay—I refer to the country stretching to the great lakes, the Upper Mississippi, and Lake Winnipeg, and watered by the Upper Missouri and its tributaries, by the two branches of the Saskatchawan and the Red river of the north—is adapted for the most part to settlement and civilization. It is not simply a grazing country, but all through it are large bodies of arable land,that entitle it to the distinction of being considered an agricultural country.

In my judgment, the time will come when there will be agricultural settlements throughout the whole extent of this country, from the Mississippi to the shores of the Pacific, simply excepting limited extents of country along the higher part of the mountain chains, and in some of the prairie regions, to be referred to more particularly hereafter. As illustrative of the capacity of this country, I beg to refer to a few facts. The Indians of Washington Territory and Oregon, east of the Cascade mountains, are rich in horses and cattle, the former of which have been introduced within a hundred, and the latter within thirty years. Their wealth perhaps is not equalled by any civilized community on this continent. Indians among those tribes own from 1,000 to 4,000 head of horses and cattle each. The Spokanes and Flathead nation have many horses and cattle, which range the winter long without fodder, and, as I know from personal observation, they do not shrink away but very little in flesh. Never have I seen fatter beef than the Indian cattle, in the Walla-Walla, in January. At Fort Benton and Fort Union, where there are large numbers of horses and cattle, they retain their flesh all winter without fodder.

We now come to the development of this great portion of our country, which I shall consider both as regards the agencies actually at work now to develop the region, and the measures which should be adopted looking to the advancement and prosperity of the whole country. Much has been already done. The country has been explored by order of the government. A commencement has been made in surveying the public lands. Some progress has been made in negotiating treaties with the Indian tribes, and those same Indian tribes have recently been shown a memorable instance of the power and the determination of the government, to protect the lives of its citizens. The surveys have enabled me to speak with certainty of the resources of the country, and they will enable me to speak with some confidence as to other measures which ought to be undertaken to develop that country, looking always to the honor and renown of all these United States.

The discovery of gold in British Columbia has developed, on the part of the British people, an earnest persistent determination to establish communications across the continent to bind into one union all its North American possessions. It is an object worthy the power and enterprise and the prestige of the British government, and I thank God that there is not an impulse of my soul, which would cause me to feel any uneasiness or any jealousy at the success of such an undertaking. Here we are, two great powers, speaking the same tongue, and let us look upon it as a friendly race for supremacy. Let us see which, in this friendly race, will outstrip the other—which shall be the carriers of the commerce of the world.

Gentlemen, the time has passed for men seriously to discuss the question as to whether the wants of commerce, the duties and responsibilities of government, the fulfilling the relations of social and domestic life, do not demand a secure and rapid transit from ocean to ocean. The question simply is, is it practicable to establish great lines of travel from the water line of the great lakes to our magnificent Puget's sound, that port which is the nearest of all our ports to Asia? Again the question is, do not great national interests urge the accomplishment of this enterprise at the earliest possible moment? It is not whether such an undertaking will inure to the benefit of Puget's sound or the people of the great lakes, but whether this is not a project upon which rests the question, as to whether the great carrying trade from Asia to Europe shall pass over American or British soil; whether upon the success of this undertaking does not rest the question, whether the key of the Northern Pacific shall be in the hands of the American people or in the hands of the subjects of a foreign power. It seems to me that not New York, or Boston, or Portland, is alone interested, but every part of our Atlantic and Gulf coast, and the entire country.

And, Mr. President, if it be a practicable undertaking to build this road and establish this route, it is the duty of our government and of our people to push it forward. It ceases to be sectional and geographical and partisan, and it rises into a noble and elevated nationality, to which all hearts should yield. I propose to discuss this question in the light of the practical experience, developed in the prosecution of great railroad enterprises, in regard to which the facts stand out in letters of gold.

The first question which I shall consider is, the objections urged against the northern route in consequence of the severity of the climate and the excessive depth of the snows, and I regret to be obliged to waste time on a matter which has long since been established. But it is still called in question by men of intelligence, and has even place in official reports.

In an examination of that country, which I made in the years 1853–'4–'5, I deemed it a fundamental and essential fact to be determined, and it was determined in a manner that will enable me to speak positively. The passes of the Rocky mountains, Hell Gate, Northern Little Blackfoot, and Cadot's Pass were crossed by my parties in the months of December, January, February and March, in the years 1853–'4, and in no one of these passes did they find more than fifteen inches of snow. In the winter of 1854–'5, the Flathead Indians passed through these passes in January, February, and March; whole tribes, with their women and children, and their pack animals laden down with furs and meat. I was informed by Victor, head chief of the Flathead nation, an Indian whose valor and courtesy and truth have become classic in the pages of the Jesuit Missionary de Smet—by Victor, who at seventy-five is still the leader of his people in war, and first in the chase of the buffalo, that since the memory of the Indian, they had passed these mountains year after year through the winter months. That same winter, the party that crossed the Rocky mountains in January, went down Clark's Fork in February; they went on horseback, the sole trouble being that there were some places where the snow was deep enough to cover up the grass; but in these cases it was in the wooded portions, and 2½ feet was the greatest depth.

When they left the wooded region where it was 2½ feet deep, and came to the prairie region, they found that it was but a foot deep. Every gentleman knows what influence forests have in preserving the depth of the snow, and how it disappears when the land is cleared. The question is not what depth the snow is in the forests, but what it will be on the cleared land. There is one point alone about which we have not sufficient information, and that is, the crossing of the Cascade mountains to Puget's sound; but I am satisfied that there will be no serious obstruction from snow. The snow was but six feet, for a short distance, in the latter part of January, 1856, and I am of opinion that it did not subsequently increase much in depth, though this fact has not been determined by actual admeasurement. At Fort Benton and Fort Campbell, ever since they were established some twenty-five years since, the fur companies have taken their goods to their winter trading posts, on the Milk and Marias rivers, in wagons, there not being snow enough for sleds. Will the snows of this route, which do not prevent the Indians from travelling, furnish any difficulties which will render it unusually troublesome for the passage of railroad cars?

I will now consider the question of the cold. It is alleged, that the weather is so cold on the route of the 47th parallel, that it will be impracticable to work men in the construction of the road for a large portion of the year, and that it will be impracticable to run cars for many days in the winter.

Unfortunately for these opinions, we happen to have observations on these points, and to have great lines of railroad in operation over tracts of country as cold, and even colder than the route from Fort Benton to the shores of the Pacific. The mean winter temperature at Fort Benton in '53–'54 was 25°.38, above zero. The average at Montreal, on the Grand Trunk railroad, for the same year, was 13°.22, and for a mean of ten years 17°.80, above zero. At Quebec it was, in '53–'54, 11°.03, above zero, and for a mean of 10 years 13°.30, above zero. On the great Russian railroad, from St. Petersburg to Moscow, the comparison is very similar. The mean winter temperature for a series of twenty-one years at Moscow is 15°.20, and at St. Petersburg, for a mean of twenty-five years, 18°.10, above zero.

At Fort Snelling, on the great lines through Minnesota from St. Paul to Pembina, and from St. Paul to Breckenridge, now actually in process of construction, the mean winter temperature of '53–'54 was 11°.64, and the mean of thirty-five winters 16°.10, above zero. Thus in the winter of '53–'54, an unusually cold winter, Fort Benton was 12° warmer than Montreal, 14° warmer than Quebec, 14° warmer than Fort Snelling, 10° warmer than Moscow, and 7° warmer than St. Petersburg,. Looking to the Bitter Root valley, we find its average temperature in the winter of '53–'54 to be 24°.90, and in '54–'55, 30°.30 above zero, making it for the two winters respectively 10° and 15° warmer than at Moscow, and 7° and 12° warmer than at St.

Petersburg. In 1853–'4 it was 12° warmer than at Montreal, and 14° warmer than at Quebec. But I will not content myself with giving you the average winter temperatures: let us consider the greatest cold observed. The greatest cold in the winter of '53–'54 was 29° below zero at Cantonment Stevens. At Fort Snelling it was 36°, at Montreal 34°, and at Quebec 29°, below zero, from which you will see, that on this route, the greatest cold is not equal to the greatest cold on the route of the Grand Trunk railroad of Canada. The same fact is unquestionably true of the great artery of Russia from Moscow to St. Petersburg, but I have not been able to obtain the daily observations for purposes of comparison. We will look at it in another point of view. Take the number of cold days when the average temperature was below zero. The average temperature was below zero twelve days at Fort Benton, ten days at Cantonment Stevens, eighteen days at Fort Snelling, eighteen days at Montreal, and twenty-three days at Quebec. Thus you will see that there were more cold days on the line of the Great Trunk railroad, and of the roads in Minnesota, than on this northern route. Having compared the average winter temperatures, and the number of cold days, let us look at the climate in another point of view. Take the number of warm days when the average temperature was above the freezing-point, and I find that at Fort Benton the thermometer was forty-three out of ninety days, and at Cantonment Stevens thirty-two out of ninety days above the freezing point, against only six days out of ninety at Fort Snelling, five days out of ninety at Quebec, eight days out of ninety at Montreal, and eighteen days out of ninety at Albany—all in the winter of 1853–'54.

But it may be objected, that the temperature of Fort Benton and Cantonment Stevens is not the measure of the temperature of the intermediate rocky range through which the route passes, and which must be much lower. Fortunately the party of Lieut. Grover, which has been already referred to in connection with the depth of snow, made observations of temperature on the route, and it has been found by careful comparison that the party made the passage during the extreme cold weather of that winter, and the temperatures observed, therefore, indicate the extremest cold of the pass, and not the usual cold. A very intelligent young man who accompanied Lieut. Grover to Fort Owen returned immediately, and found the weather very mild and pleasant in the pass, corresponding to the observed temperatures at Fort Benton and Cantonment Stevens. The mean temperature in the pass from January 12th to January 23d, 12 days, was 10° $\frac{1}{10}$, below zero. At Cantonment Stevens the mean temperature was 5°.2, below zero; at Fort Benton 7°.3, below zero. The greatest mean cold of any day observed in the pass was 22°, below zero, against 24° at Fort Snelling, and a still lower figure at Pembina. That the winter of '53–'54 was unusually cold in the mountain region of the northern route, is shown in the fact that, in the Bitter Root valley, the thermometer never went down to zero in the winter of '54–'55, whilst it fell as low as 29° below zero in the winter of '53–'54. The average mean temperature of this valley in the winter of '53–'54 was 24°.90, whereas in '54–'55 it was 30°.30. The same general result, determined by observation, as regards the temperature of the pass, would be arrived at by using the formula, that every 1,000 feet in altitude would depress the temperature three degrees. Now only six miles of the pass is more than 5,000 feet above the sea, the greatest altitude being but 6,044 feet, and the average height of the pass is but about 4,000 feet. The pass, considering simply 165 miles of the distance, where the altitude exceeds three thousand feet, will be only from one to ten degrees colder than Fort Benton, and except the six miles above mentioned only from one to seven degrees colder.

Gentlemen, it seems to me that these facts, drawn from official records, every one of them entirely reliable, ought to settle forever the question which has been raised prejudicial to this route, that it will be obstructed by snow and cold weather. So successful has been the great railroad from Moscow to St. Petersburg, that they are now pushing railroads in all directions, running them into regions truly Siberian, crossing tracts where for three months the thermometer never rises above zero, and for many days the temperature is lower than the greatest cold ever reached in the mountains of the United States. We find that Canadian roads are being extended westward utterly regardless of those objections, experience having shown their futility. I have lived in the snow State of Maine, and am familiar with lumbering operations on the Kennebec and the Penobscot, where timber is cut, roads are opened, and logs hauled to the streams to have them in readiness for the freshets of spring, in snow four to six feet deep. We have a body of railroad engineers and contractors who have gained their professional and practical knowledge in these snow regions, and who know that the obstacles which have been apprehended from snow have all disappeared in the light of experience. It is not the snow of your mountains in the interior, even if it should reach a depth of from six to eight feet, that will be an obstruction to the passage of cars, for by raising your road-bed and using the plough you can throw it off without difficulty. The snow comes not in single falls, but in successive falls, and there will be no difficulty in keeping the track clear. On the seaboard, the snow when followed by rain, and the weather suddenly turns cold, freezing the sleet to the rail, may and does sometimes furnish an obstruction, that may require days to overcome. If I were asked, where I should expect the most difficulty from snow in the whole country, from the Atlantic to the Pacific, I should say the first ten miles from the Atlantic ports. I cannot say this for the Pacific ports, for there snow is seldom seen, and when it does fall it disappears in a short time. I shall therefore assume that this route is entirely practicable so far as regards cold and snow, and will pass on to a more detailed view of its characteristics and its relation to other routes. I will present it as a good route for emigrants by the ordinary conveyances of the country.

The distance from St. Paul's and the western end of Lake Superior to the shores of Puget's sound, is in round numbers eighteen hundred miles. Will the difficulties which I have presented in the way of a railroad, interfere with the carrying of the mails and the transportation of passengers the entire year on this route? I think not. I think that not only ought the mails to be carried over this route the entire year, but in a limited number of days. The service ought to be rendered on this road in wagons in eighteen days, which would be only one hundred miles a day. Russia, in the matter of her enterprises for carrying the mails, is ahead of any other Power in the world, and she can give us lessons, that it will be well for us to profit by. Our consul at the Amoor, Mr. Collins, has given us the facts of the great postal service of Russia from Moscow to Irkoutsk, in eastern Siberia. The distance is not eighteen hundred, but three thousand four hundred and twenty-six miles. On this route are established two hundred and ten stations, with a postmaster and the necessary relays of horses at each station. The contractors are obliged to carry the mails twice a week, and they are also obliged to transport passengers over the route at certain rates of travel, to wit: at eight miles an hour in winter, six and two-thirds in summer, and five and one-third in the fall. The time required to carry the mails over the entire route, is from twenty-five to thirty days, a distance on the average of from one hundred and twelve to one hundred and thirty-seven miles per day, while the government couriers go over th route in from fifteen to twenty days, or at an average of from 171 to 228 miles per day. That mail route is between the 52d and 58th parallels, crosses considerable mountain chains, and the thermometer in winter, on a large portion of it, is habitually below zero. At Moscow, the eastern terminus of the route, the average of the thermometer is 15°, and at Tobolsk 2° above zero, while at Tomsk it is 2°, and at Irkoutsk 1° below zero. The average temperatures for January, for the three latter places, were respectively 3°, 5°, and 6° below zero. Mr. Collins himself travelled over the entire route in winter and early spring, making such rates of travel as these. He travelled from Verch-neo-dinsk to Chetah, 300 miles, in forty-five hours; from Irkoutsk to Kyachta, 367 miles, in forty-eight hours. But he mentions another fact more significant still. On this distance of 3,426 miles, between the parallels of 52 and 58, the thermometer on a large portion it, through the winter, below zero, he found five hundred cities, and villages, and towns, showing conclusively that the extreme cold presented no difficulty in the way of the occupation of the country. This has all been done by imperial edicts, acting on a nation of serfs, done simply in obedience to the idea of reverence for authority. What will not the genius and enterprise of freemen and citizens do on any of our overland routes, when the government comes forward and establishes its mail service, when the contractor is not hampered by petty and exacting restrictions, and our people are left free, each man to carve out his fortunes and his home. The Czar of Russia establishes his route, and in part builds up his towns and villages and cities with his prisoners of State and the refuse of his jails, whereas in our case it will be the very flower and substance of our people, who will apply the energies of freemen and of sovereigns to the building up of our routes. I therefore have a right to assume, in the light of the experience of the great mail service of Siberia, that there will be no difficulty on our, comparatively speaking, much milder and shorter route.

Let us look, however, to existing routes within the limits of the United States. The cold on the route from St. Paul's to La Crosse is greater than in the Rocky mountain region of the northern route, and yet from St. Paul's to La Crosse the mails will be carried this winter, a distance of nearly two hundred miles, in forty-eight hours. For the last twelve years, the mails have been carried from St. Paul's to Pembina, without, in any case, a failure to carry them in the prescribed time.

The pioneers of Minnesota and the Northwest find no difficulty in encountering the cold and attending to their outdoor business, and they are satisfied that the mails can be carried in that region, and passengers transported as rapidly as in the Russian service.

When we meet such men, admitted to be men of experience, integrity, and capacity, and who from unpromising and uncertain beginnings have carved out fortune and reputation, let us accept the results of their experience and observation, rather than the speculations of the closet and the systems of the schools.

I now come specifically to the discussion of this northern route, and I will compare it, with all the candor and fairness I am able, with other proposed routes, and endeavor to show, from statistics, how much entitled it is to national consideration.

Railroad lines have frequently been presented by way of antagonism to water lines. Now each has its part in the economical transportation of passengers and freight; railroads cannot do away with canals, nor canals with railroads. We find, that with the extension of our great railroad system, the canal system has also been extended in an equal proportion.

New York has built her great lines of railroads, and she has also enlarged her Erie canal. The Canadas have built their Great Trunk and Western roads, and now new projects are presented for shortening the water communication from Lake Huron to the waters of the St. Lawrence. We find that the cost of transporting goods on great water lines is vastly less per mile, than the cost of transporting goods on railroad lines. In a large ocean voyage the rate is, perhaps, one and a half mills per ton per mile; on a great navigable river, or great canal, the amount increases to two and a half mills per ton per mile; whereas there is no railroad line, built at home or abroad, where the cost of transportation will be materially less than five mills per mile, and it will vary, according to the grade of the road, from five to twenty-odd mills per mile. Thus you will observe, that on the great water lines, the ocean, the Mississippi, the great lakes and the New York canals, the cost of transportation is but a fraction, seldom exceeding one-half, and not often one-quarter, the cost on the railroad; and hence, even in the case of water lines closed by ice nearly half the year, they will carry the heavy and bulky commodities, as grain, coal, and machinery; the railroads carrying the light, perishable and costly articles, where time becomes an important element in the cost. If a railroad communication be an inseparable connecting-link between great water lines, it is entitled to special consideration. Such is the proposed railroad on this northern route. It connects the navigable waters of the Missouri with the navigable waters of the Columbia, and at the head of steamboat navigation. It connects Puget's sound and the Columbia valley with the head of navigation of the great St. Lawrence basin, and with the heads of navigation of the Mississippi and the Red river of the north. It is the shortest equated railroad line across the continent, whether the eastern terminus be on the western border of the States or on the Mississippi, or, in the case of the northern route, on Lake Superior; and it is much the shortest lineally of all the roads, except those from San Diego and San Pedro, on the route of the 32d parallel.

In connection with either the great lakes and its system of canals and rivers, or the great railroad lines of the Canadas and the United States, it furnishes the most direct and cheapest route on the continent for freights and passengers from Asia to Europe and back again, and also between Asia and the people of our Northwest, our West, our centre, our East, and the great seats of commerce on the Atlantic coast.

The lineal distances on the route of the 32d parallel to the Mississippi are 1,748 and 1,683, against 1,747 and 1,764, the lineal distances of Vancouver and Seattle from St. Paul's, and against 1,733 and 1,750, the lineal distances of Vancouver and Seattle from Superior City; and starting from the western border of the States, the lineal distances on the route of the 32d parallel are 1,598 and 1,533 miles, against 1,527 and 1,546 miles, the lineal distances from Breckenridge to Vancouver and Seattle.

The following table is from official reports, wherein I have shown the distances on an air-line between the termini of the several explored practicable railroad lines across the continent, the lineal distances, the sums of ascents and descents, the equated distances in miles, the estimated cost, the extent of cultivable country, the extent of country which is less than 1,000 feet above the sea, the extent of country which lies between 1,000 and 2,000 feet above the sea, the extent of country between 2,000 and 3,000 feet above the sea, the extent of country between 3,000 and 4,000 feet above the sea, the extent of country between 4,000 and 5,000 feet above the sea, the extent of country between 5,000 and 6,000 feet above the sea, the extent of country between 6,000, and 9,000 feet above the sea, and the summit of the highest pass on each route for the routes of the 47th parallel, 42d parallel, 35th parallel, and 32d parallel.

Table showing the lengths, sums of ascents and descents, equated lengths, cost, &c., of the several routes explored for a railroad from the Mississippi to the Pacific.

	Distance by air-line.	Distance by proposed railroad route.	Sum of ascents and descents.	Length of level route of equal working expense.	Comparative cost of different routes.	Number of miles of route through cultivable country.	Number of miles of route through land generally uncultivable, arable soil being found in small areas.	Number of miles at an elevation above the sea between—							Altitude above the sea of the highest point on the route.	Tunnel at an elevation of—
								0 and 1,000.	1,000 and 2,000.	2,000 and 3,000.	3,000 and 4,000.	4,000 and 5,000.	5,000 and 6,000.	6,000 and 9,000.		
	Miles.	*Miles.*	*Feet.*	*Miles.*											*Feet.*	
Route near 47th and 49th parallels, Breckenridge to Seattle	1,247	1,544	21,787	1,958	$94,915,380	1,224	320	130	433	733	180	62	6	......	6,044	5,195
Route near 47th and 49th parallels, Breckenridge to Vancouver	1,213	1,527	17,587	1,861	94,282,880	1,207	320	243	391	648	178	61	6	......	6,044	5,195
Route near 41st and 42d parallels, from Council Bluffs, via South Pass, to Benicia.	1,410	2,032	29,120	2,583	116,095,000	632	1,400	220	170	210	160	590	285	397	8,373	....

TABLE—Continued.

	Distance by air-line.	Distance by proposed railroad route.	Sum of ascents and descents.	Length of level route of equal working expense.	Comparative cost of different routes.	Number of miles of route through cultivable country.	Number of miles of route through land generally uncultivable, arable soil being found in small areas.	Number of miles at an elevation above the sea between—							Altitude above the sea of the highest point on the route.	Tunnel at an elevation of—
								0 and 1,000.	1,000 and 2,000.	2,000 and 3,000.	3,000 and 4,000.	4,000 and 5,000.	5,000 and 6,000.	6,000 and 9,000.		
	Miles.	*Miles.*	*Feet.*	*Miles.*											*Feet.*	
Route near 35th parallel, from Fort Smith to San Francisco	1,550	2,096	48,521	3,015	$106,000,000	646	1,450	585	290	261	236	181	295	248	7,550	....
Route near 35th parallel, from Fort Smith to San Pedro	1,360	1,820	48,862	2,745	92,000,000	420	1,400	354	292	236	210	185	295	248	7,550	4,179
Route near 32d parallel, from Fulton to San Francisco, by coast route	1,630	2,024	38,200	2,747	90,000,000	834	1,190	893	347	120	342	271	50	......	5,717	....
Route near 32d parallel, from Fulton to San Pedro	1,400	1,598	30,181	2,169	68,000,000	408	1,190	478	337	120	342	271	50	......	5,717	....
Route near 32d parallel, from Fulton to San Diego	1,360	1,533	33,454	2,167	68,000,000	374	1,159	420	305	125	362	271	50	......	5,717	....

I have assumed as the starting point of the northern route, for the purpose of this comparison, Breckenridge, on the western border of the State of Minnesota, a point which is a terminus of a road now actually under construction by aid of the land grants of the government.

The following table makes the eastern termini at Superior City and St. Paul's, and of the other routes, on the Mississippi river ;

Table showing the lengths, sums of ascents and descents, and equated distance (or length of level route of equal working expense) of the several routes explored for a railroad from the Mississippi to the Pacific.

	Distance by proposed railroad line.	Sum of ascents and descents.	Length of level route of equal working expense.
Route near 47th and 49th parallels, Superior City to Seattle	1,750	21,787	2,164
Do do do Vancouver	1,733	17,587	2,067
Route near 47th and 49th parallels, St. Paul's to Seattle	1,764	21,787	2,178
Route near 47th and 49th parallels, St. Paul's to Vancouver	1,747	17,587	2,081
Route near 41st and 42d parallels, from Rock Island, via Council Bluffs, via South Pass, to Benicia	2,299	29,387	2,853
Route near 35th parallel, from Memphis, via Fort Smith, to San Francisco	2,366	48,791	3,285
Route near 35th parallel, from Memphis, via Fort Smith, to San Pedro	2,090	49,132	3,015
Route near 32d parallel, from Gaines, via Fulton, to San Francisco, by coast route	2,174	38,350	2,897
Route near 32d parallel, from Gaines, via Fulton, to San Pedro	1,748	30,331	2,319
Route near 32d parallel, from Gaines, via Fulton, to San Diego	1,683	33,604	2,317

If I am met with the objection that the Arkansas, Mississippi and Missouri are navigable, and that the routes on the 42d, 35th and 32d parallels should be stopped short at navigable waters, then, for purposes of comparison, I say very well, we will stop the northern road at Fort Benton, at the head of steamboat navigation of the Mississippi, which will give a result vastly in its favor. I am of opinion, however, that the Mississippi valley and the great lakes is the proper eastern base. Thus we find—the western terminus of the routes of the 42d, 35th and 32d parallels, being San Francisco—that the lineal length of the northen route is 549 miles shorter than that of the 42d parallel, 616 miles shorter than that of the 35th parallel, 424 miles shorter than that of the 32d parallel; and that, as regards the equated distances, the northern line is 689 miles shorter than the line of the 42d parallel, 1,121 miles shorter than the line of the 35th parallel, and 733 miles shorter than the line of the 32d parallel. But, looking to the eastern terminus, where are you when you reach the Mississippi on the route of the 42d, 35th and 32d parallels?

You are on a great navigable river, from which you can supply the Mississippi valley; but how will you reach New York, Chicago, Portland, Boston, Philadelphia and Baltimore?

Will you tranship on the Mississippi, and take your winding course by the Gulf of Mexico, or take the rail, and seek some of the intermediate water lines which stretch along the whole distance?

Will you make use of the Ohio, and the railroads and canals of New York, Pennsylvania and Virginia? On the northern route we are on navigable waters; we are now ready to enter our ships and go to Europe, or to New York; or, arrived at Montreal, we can pass by rail to Portland. If we compare Chicago as a great lake port with Superior City, its distance from Puget's sound on the northern route via St. Paul's, is 317 miles shorter than its distance from Benicia via South pass.

The lineal distances from Seattle via Northern route, via St. Paul's, and from Benicia via South Pass, via Council Bluffs, via St. Louis, to these several ports of the Atlantic and Gulf coast, will be as follows:

	Seattle, via St. Paul.	Benicia, via St. Louis.	Differences in favor of Nor'n route.
Portland	3,249	3,831	582
Boston	3,352	3,696	344
New York	3,126	3,546	420
Philadelphia	2,988	3,454	466
Baltimore	2,966	3,355	389
Washington	3,004	3,375	371
Charleston	3,328	3,445	117
Savannah	3,313	3,430	117
Mobile	3,030	3,147	117
New Orleans	3,115	3,232	117
Averages	3,131.1	3,453.1	

The distance from Benicia to St. Louis is 2,482 miles.

Thus the average distance from Seattle, via St. Paul's, to the principal ports of the Atlantic and gulf, is 316 miles less than the average from Benicia via St. Louis to the same points. This saving of distance via St. Paul's ranges from 117 miles, as in the case of New Orleans, to 582 miles, as in the case of Portland. If the equated distances were used, it would make an additional difference in favor of the northern route of 137 miles. Thus every seat of commerce on the coast is nearer to Puget's sound by the northern route, than to the waters of San Francisco by the central route. See Appendix for the lines in detail.

I am, however, of the opinion that no single line of railroad is the proper American solution of the problem of continental communication.

The northern route should not alone be patronized by the government. The mail service now in operation, and about to be put in operation, indicates three lines which should share the patronage of the government; but these few facts as to distances, and the known relations between water lines and railroad lines, must show you conclusively that on this northern route must pass the great carrying trade from Asia to Europe, and from Europe to Asia; that on this northern route must pass Asiatic supplies for much the largest portion of our own country and the Canadas. It is most emphatically a national route; and if we do not establish it, the British people and government will establish one north of the 49th parallel, and then we shall find ourselves in the position of the people, from whose hands had passed the sceptre of Judah.

It will be pertinent in connection with this northern route for a Pacific railroad, to refer somewhat in detail to its capacity for settlement. I have had the advantage of going over the difficult and disputed points of this road three times, and have travelled over it at various seasons of the year. The last time I crossed the mountain region was in the months of November and December, 1855; and I am of the opinion, derived from careful, and, I trust, accurate observation of the country—that continuous agricultural settlements can be planted nearly the whole distance along this line. If you will follow me on this map, you will perceive that the continuous line of settlement will extend to beyond James river, in the new Territory of Dacotah. From that point to the entrance to the valley of Mouse river, there are swales and good land from point to point, sufficient to form nuclei for mail stations, at less than fifteen miles apart. In this Mouse River valley there is much cultivable land. In crossing the Grand Couteau du Missouri, you come to an undulating and somewhat broken surface, which furnishes tolerable grazing; but for fifty miles, not much land for settlements. When you come to the Missouri, in the vicinity of Big Muddy river, you find a region for settlements, and a large tract of country admirably adapted to all kinds of cereals and vegetables.

The Milk River valley, through which the route passes, has very fine wheat lands, not simply in its own valleys and those of its tributary streams, but in the adjacent prairies. When you reach the Missouri again, you come to bottoms of arable land, with groves of cottonwood, like those of Milk river, of large growth, suitable for fires and building. The various tributaries of the Missouri, in the vicinity of the head of navigation, furnish large quantities of arable land.

The Marias, Teton, Sun, Dearborn, High Wood, Smith's, Judith, and other streams are all well adapted to settlement.

In the summer of 1854, explorations were made from Fort Benton along the eastern base of the Rocky mountains; and where you see this summer isothermal line, there are rich farming lands. Inspect this line, and you will find it sixty degrees above zero; and there is nothing in the summer temperature which will interfere with crops. Recollect that there are no chilling blasts from May to October, to blight the promised harvest; and here let me say, that when Lieut. Mullan passed this Divide (Mullan's pass) in March, from Fort Benton, he found no snow in the pass or along the route. I will therefore say, in round numbers, that from Breckenridge, on the Red river of the north, to the Divide of the Rocky mountains, the route passes through strictly a cultivable country, capable of continuous settlement, except for about 150 miles, in three several sections of about equal lengths; on this portion you can plant agricultural settlements, at points sufficient for railroad or mail stations. From near the Divide of the Rocky mountains, the country is capable of continuous settlement to within twenty miles of the Divide of the Bitter Root mountains; the eastern half of the great plain of the Columbia, the northern and the southern portions, consist of rich river valleys and fertile table-lands. A portion of the western half will not furnish arable land for continuous settlements. Between the Columbia and the Cascade mountains, the line is flanked on the south by a large body of fertile land, and passes immediately through a fine grass country, and for at least half the distance through an excellent cultivable country. From the Cascade mountains to the Sound, the line passes through a continuously cultivable country. I estimate that the mountain region between the head of the Missouri and the great plain of the Columbia, the whole intermediate country, admits of continuous cultivation, except about forty miles on the highest part of the Rocky mountains, and thirty miles in the highest part of the Bitter Root mountains. Look on this map: There is a prairie (pointing it out on the map) of 3,000 acres, four to eight miles west of the Divide of the Rocky mountains, where can be raised wheat and the ordinary vegetables.

The railroad line could be laid over the great plain of the Columbia so as to pass over a continuous cultivable country to the Columbia, except for a few miles; but to cross north of the mouth of the Snake river, which is desirable to avoid detour, it will pass over about fifty miles of country not adapted to continuous cultivation, and having the general characteristics of the western half of the great plains already described. I will estimate that there are fifty miles of uncultivable country between the main Columbia and Puget's sound, though it is a large estimate. Thus, in the whole distance from Breckenridge to Seattle, a distance of 1,544 miles, the route passes through only about 320 miles of uncultivable country. East of Breckenridge, to St. Paul's and Lake Superior, the country is exceedingly rich, and inviting to the settler.

In the report of the explorations which I made in 1854, I did not do justice to the route. I was over-cautious. As I crossed the country, I was astonished to find it so different from report, and I took great pains to guard against speaking of it in terms of extravagance. Especially did I do injustice to the country between the Cascades and the Bitter Root. It has since been more carefully examined by myself, and information has been collected from various sources. The Indian agents have done much in this way, in the discharge of the duty intrusted to them of ascertaining suitable places for reservations. The agent Bolon, who was murdered by the Indians at the commencement of our disastrous war in the fall of 1855, had in the previous summer carefully examined the country between the Cascade mountains and the main Columbia, known as the Yakima country, and found it much better than he supposed it to be the previous season, when engaged on duty with the exploration, and when he regarded it as a good country. It has, unquestionably, a large quantity of good arable land, and it is on the railroad line to Puget's sound. From the Cascade mountains to the Sound, the only difficulty in the way of farming will be the immense forest growth, which covers nearly two-thirds of the country.

I have simply presented these facts to show the cultivable character of the country. I have presented the country as it is on the earth's surface. I do not desire to make any invidious comparisons with other routes. I am ready to admit that other routes are equal in agricultural capacity. I wish they were, for it is my opinion that the more practicable routes we have, the more and larger settlements we plant on them, the more will it help to unite our country, and make us the first Power on earth.

There is another consideration, however, which I shall advert to, lest invidious comparisons should be drawn against the northern route in favor of more southern routes. I refer to the present capabilities of this route—to the agencies now at work to facilitate settlements, the organization of a mail service, and the building of the railroad.

On this route there are already considerable establishments, not simply of horses and cattle, but of farms—not merely at Fort Union, and Fort Benton, but at other points, where cattle and horses are found in great numbers. In the Flathead country there are many farms enclosed, and, although they have been commenced only a few years, there will be the present year a very considerable surplus. At the Jesuit mission in the Flathead country, they will manufacture 300 barrels of flour more than they will consume, nearly all the wheat having been raised by the fathers and brothers of the mission, with the assistance of such Indians as they could get to work. This flour they have contracted to furnish to the forts of the American Fur Company on the Missouri, and they will take it over the mountains in wagons. The Indians had last year fifty farms, averaging five acres each, under cultivation. There are in this region two grist, and two saw mills.

If we pass over the Bitter Root mountains to the Spokane, there we find farms, with their fields, and horses, and cattle. In the Colville valley, there is now a continuous settlement of one hundred and twenty different farms. The Walla-Walla valley is also settled to a considerable extent.

Another thing to be considered in regard to planting settlements through the country is that seeds, farming utensils, and supplies of all kinds, both for settlers and for travellers, can be carried by steam to the mouth of the Palouse, so that in connection with the running of steamers on the Missouri to Fort Benton, supplies need in no instance to be wagoned more than two hundred and twenty-five miles, which statement shows how well prepared we are for any operation, which either the government or the citizens of the country, may think proper to undertake. In my railroad report of 1854, I gave a scheme, and presented a programme for building this road, which proposed making use of the waters of the Columbia and Missouri, for transporting the workmen, and tools, and materials of all kinds, and organizing the work in corresponding divisions. One would be from Puget's sound and from Vancouver to the point where the railroad line crosses the

Columbia, another from this point to the head of navigation at Fort Benton, a third from Fort Benton to Fort Union, another to St. Paul's, and the western end of Lake Superior.

Thus the route can be thrown into four divisions, on each of which you can work from both ends, so that eight sections may be worked at a time, affording extraordinary facilities to hasten the construction of the road. The most difficult of these divisions, the one between the Columbia and Missouri, could be attacked almost as soon, within two or three months, as those lying on the Pacific or great lakes. Now, here are railroad men, and they know what can be done. Suppose your route is established, a company formed, and ample means at hand; the only question for consideration will be, what are the engineering difficulties on the route, and how long, if they are vigorously dealt with, will it take you to run the iron horse from Fort Benton to the Columbia? It is not necessary to wait till the tunnelling is done on the route, as you can adopt, for the nonce, the system of zigzags, by which the Alleghanies are scaled in Pennsylvania.

I am satisfied that our railroad men would not feel complimented, if they were told they could not build such a road in four years after the location was made, and everything in readiness to commence the work. The great difficulty will be to raise the money, and not to build the road when the money is raised. Money is the sinew of railroad progress, as well as of war. But, sir, an engineer in presenting his programme considers simply the engineering difficulties. It is for presidents, and directors, and companies, to raise the money.

British Columbia is attracting the attention of this country, and of Europe, and of course a movement will be made to reach that country by great lines north of our parallel. I have been thankful for this for two reasons: One, that it redeems the northern route from the reproach of being the Siberian trail, and makes it a central route with regard to the water line of the great lakes; and also, because I think the occupation of that country to the north of us, will cause our progress to be accelerated. I desire, from reliable statistics, to give some data from which to draw comparisons between our northern route and the routes still further north. Before doing this, however, I wish to state in the most explicit manner, that in my judgment, there is a vast gold region in the northwest portion of our continent. Gold is not found simply in British Columbia, but for a long distance south of our parallel, and extensive and remunerative diggings have been discovered in Washington Territory. The gold regions of Washington extend through the Cascade mountains, north of the Columbia, and thence eastward along Clark's fork and the Kootenay river, to near the Rocky mountains. Geologists have passed over the ground, and confirm the reports of the miners, as to the presence of gold throughout this vast region. We have the evidence of officers of the army and Indian service, and of reliable citizens, as to paying localities. In 1855, rich paying deposits were actually worked on Clark's fork, on the tributaries flowing into the Columbia, from both its eastern and western shores. In 1855, a great movement from Oregon and Washington was directed to those mines. A thousand men were on the road, when the Indian war broke out, and prevented their generally reaching the mines; but through the labors of the few who got to and worked the mines in 1855, we became possessed of the information. It is due to American citizens, that America and Great Britain became possessed of reliable information as to the gold of British Columbia. Had our Indian war been brought to a close in 1856, as it would have been, if the same uncompromising and stern measures had been taken as were taken last summer, the wealth of Washington, its gold, its platina, and lead, and silver, and copper, and quicksilver, would have been known to the world.

If you will read the most interesting narrative of Dr. Perkins, who came near losing his life amongst the Indians, and who prospected on Clark's fork last July and August, you will see why our people have not hitherto been able to work the mines, rich though they be.

The reverend Father De Smet, who went through Oregon as a missionary of the Christian faith, who is reverenced by Indians and by the white man, has, in his book, shown how rich the country is in mineral wealth. In conversation with his friends, he has dwelt particularly on the richness of its mines in gold. You are familiar with the character, experience, and great attainments of these Jesuit fathers, and know that reliance can be placed on their statements, in reference to the capabilities and resources of a country, which they have examined.

Therefore, in making the comparison between the northern route and others still further north, looking to the gold region, I wish you to bear in mind that the northern line leads you directly to it, as well as the lines north of the 49th parallel.

The distance from St. Paul's, *via* the northern route, to Colville, is 1,572 miles; and thence to the forks of Frazer's and Thompson's rivers is 290 miles more, making 1,862 altogether.

In regard to the land route to the Saskatchawan, from St. Paul's *via* Fort Garry, Fort Edmonton, and the Kootenay pass to Colville, we have the narrative of Sir Geo. Simpson, who gives a graphic account of the country and the estimated distances. He estimates the distance from Fort Garry to Colville to be nearly 2,000 miles, but his own more specific statement of time and rates of travelling per day, makes it about 1,800 miles. The distance from St. Paul's to Fort Garry, is given in a recent report of surveys of the Red River country, made under the authority of the Canadian government, at 558 miles; from Fort Garry to Edmonton 1,000 miles; and from Edmonton to Colville

800 miles; making a total of 2,358 miles, against 1,572 by the northern route, to Colville. Sir George Simpson, however, made Edmonton a point of his route, in consequence of its being one of the great trading posts, that he desired to visit. A land route can unquestionably be laid two hundred miles shorter, by the south branch of the Saskatchawan. To be within limits, we will allow 300 miles for the Edmonton detour, which will give 2,058 miles by the Kootenay pass, against 1,572 miles by the northern route. If your object, however, is to reach the waters of Thompson's or Frazer's river, then you must make Fort Edmonton a point in your journey.

The route then is to the Athabasca river, 100 miles by land, then up this river 150 miles, which you can ascend in boats; but it will probably, to avoid transhipment, be better to go by land; thence across the mountains by the Athabasca portage 100 miles to the boat encampment on the main Columbia—in all 350 miles from Edmonton. From the boat encampment, it is about seventy-five miles to the headwaters of Thompson's river, and one hundred and twenty-five miles to the headwaters of Frazer's river by the canoe tributary of the Columbia.

Thus, from St. Paul's to the headwaters of Thompson's river, the distance will be by land 1,983 miles, and to the headwaters of Frazer's river 2,033 miles. But your are on the waters of rivers unfit for navigation; for, from careful examination of narratives, I find that Thompson's river is never used, and Frazer's river rarely.

It is only the lower portion of Frazer's river that can be used for a distance of one hundred and twenty miles.

From the head of Thompson's river to its junction with Frazer's river, known as the Forks, the distance is 200 miles, and from the headwaters of Frazer's river to the same point, 450 miles; thus making the entire distance to the forks of Frazer's and Thompson's rivers, 2,183 or 2,483 miles, according as you follow down Thompson's or Frazer's river.

Now let us examine the Kootenay, and Athabasca passes, and compare them with the passes on .the northern route.

On the passes of the mountain range, in the vicinity of the Missouri, no snow is to be seen, except during the late fall and winter months. In several of the passes, snow does not fall to a sufficient depth to seriously interfere with the travelling of animals. On the northern Little Blackfoot pass, there was no snow in the latter part of March, 1854. The height of the Divides of Cadot's and the northern Little Blackfoot pass is but about 6,000 feet above the sea. From Fort Benton by Cadot's pass to the Pacific, but six miles of the country is 5,000 or more feet above the sea, and but fifty-one miles is between 4,000 and 5,000 feet. Pack-animals can cross all these passes and through the mountains, making fifty miles per day, and expresses one hundred miles per day. I have myself made the former rate, and my express men the latter.

Now, Sir George Simpson states that the Kootenay pass is from 7,000 to 8,000 feet above the sea; that it is in the neighborhood of towering mountain peaks; that a large quantity of snow falls upon the pass, and remains there till late in the spring; and that in mid-summer he found the way difficult, in consequence of morasses and boggy ground.

As regards the Athabasca portage, Ross Cox estimates its height at 11,000 feet above the sea, with Mounts Brown and Hooker in the immediate vicinity, 14,000 feet above the sea. The pass rises up about 3,000 feet from its western base.

Ross Cox made the ascent in four and a half hours in June, where he found a wilderness of snow eight feet deep, and Franchere found five feet of snow on the 16th of May, and was two to three hours making the ascent. Alexander Ross found eight feet of snow, and was eight hours making the ascent. The difficult and snowy character of the pass is also well described by De Smet, and the narratives of De

Smet, Ross Cox, Alexander Ross, and Franchere, substantially agree.

You thus see that the route to the forks of Frazer's and Thompson's rivers, by the Athabasca portage, is not only a much longer route than that by the passes of the forty-seventh parallel, and Fort Colville, but is one which is obstructed by snows in the winter and spring months.

At the headwaters of the Columbia, and the Saskatchawan, the mountains, whose crests were bowed down to the Missouri and Clark's tributary of the Columbia, have risen up again, presenting almost a wall to the transit of the emigrant wagon or the railroad car. I do not call in question the importance of these routes of the Saskatchawan for the development of the Saskatchawan country and British Columbia, and they may be good routes for emigrants from the lower Red river colony. With the extension of settlements from Canada west to Red river, and thence up the Saskatchawan, the routes must be opened, whatever difficulties be in the way, as they are necessary to the development of the country.

Now let us examine, somewhat as a practical question, these great water lines of the Missouri and the Columbia. In the first place, our lines are organized and instinct with life and steamers. For twenty-five years steamers have ascended to Fort Union, and many have gone up to points nearly half-way to Fort Benton. It may be regarded as an organized line, from the moment facilities for passengers are at hand at Fort Benton, to make the overland trip to the Columbia. There is therefore on this route, but 450 miles of land transportation between waters navigable by steamers. Now steamers have never run on the Red river of the north, Lake Winnipeg, or the two branches of the Saskatchawan, and time is required to organize the service.

There is at the mouth of the Saskatchawan a great rapid, which will require a portage. The accounts are conflicting whether you can get sufficient depth of water on the two branches of the Saskatchawan, and navigate them with steamers, when the river is unobstructed by ice. Sir George Simpson speaks of having gone down from Edmonton to Lake Winnipeg in May, in a perfectly light boat, and that he was frequently obliged to get out of the boat to haul it over shoal water. He stated before the select committee of the British Parliament that the longest reach of navigable waters was fifty or sixty miles, and that to make continuous steamboat navigation on either branch, it would be necessary to resort to canals around the rapids.

Alexander Ross, however, went down the northern branch of the Saskatchawan, making no portage except at the great rapids. I will, for the purpose of this comparison, take it for granted that you can run with steamers to Edmonton during the season that the river is not obstructed by ice, but here is a great point of difference. The Missouri river is open for more than seven months in the year, and the portion of the river from Fort Benton to Fort Union is open nearly eight months.

Go westward from the Mississippi and the climate becomes milder, and the coldest portion of the Missouri, the portion in the vicinity of Forts Pierre, Clark, and Randall, is never closed exceeding five months. This cold part of the river opens in the month of April, whereas by referring to the journals and narratives of gentlemen in the employment of the Hudson's Bay Company, you find that Lake Winnipeg is sometimes not free from ice till June. A through connection by the British system of waters, is prevented by ice seven months in the year. Thus, the Missouri is a navigable line for seven months, and Lake Winnipeg and the Saskatchawan for only five months—a fact most significant in regard to the facilities of the two lines in the matter of an overland emigration and transportation, where the distance at best is long, and where an additional month or two in the length of the season, is a matter of great consequence. The following table will give in detail the distances from the St. Paul's by the British water lines, to the head of Thompson's and Fraser's rivers, to the forks of the same, and to the mouth of Fraser's river.

St. Paul, via Breckenridge, Red river, Fort Garry, Lake Winnipeg, the northern branch of the Saskatchawan, Edmonton, and Athabasca portage, to headwaters of Thompson's river, of Frazer's river, Forks of Thompson's and Frazer's rivers, by the line of each river, and mouth of Frazer's river by the line of each river.

St. Paul's to Breckenridge	210	by land.
Breckenridge to Fort Garry	414	by water.
Fort Garry to entrance to Lake Winnipeg	36	"
Entrance of Lake Winnipeg to mouth of Saskatchawan	260	"
Mouth of Saskatchawan to Edmonton	900	"
Edmonton to Rocky Mountain House, on the Athabasca	100	by land.
Up the Athabasca	150	by water.
Thence to Boat Encampment	100	by land.
St. Paul's to Boat Encampment	2,170	
Thence to headwaters of Thompson's river	75	"
Or thence to headwaters of Frazer's river	125	"
Thence from head of Thompson's river to forks of Thompson's and Frazer's rivers, by Thompson's river route	200	"
Or thence from head of Frazer's river, forks of Thompson's and Frazer's rivers, by Frazer's river route	450	"
And thence from forks to mouth of Frazer's river, 120 by water, 50 by land	170	"
Or from Boat Encampment to Colville	450	by water.

Thus, starting from St. Paul's, to reach the head of Frazer's river, you have 535 miles of land carriage. To reach the forks of Frazer's and Thompson's rivers, by the Frazer's river route, 985 miles of land carriage, and 1,760 miles water transportation. To reach the head of Thompson's river, you have 485 miles of land carriage, and 1,760 miles of water transportation; and to reach the forks, by the Thompson's river route, 685 miles of land carriage, and 1,760 miles of water transportation. To the mouth of Frazer's river, by the route of Thompson's river, the distance by land is 735 miles, and by water 1,880 miles; and by Frazer's river the distance by land, is 1,035 miles, and by water, 1,880 miles; or on these same water lines, to reach Colville, the distance down the main Columbia from the Boat Encampment to that point being 450 miles, the entire distance will be, by water 2,210 miles, and by land 410 miles.

Now, to reach Colville, or the forks of Frazer's river, from Fort Benton, you have 480 miles of land transportation in the one case, and 770 in the other.

I wish now to make some comparison of the line of the Missouri, and the Columbia, by the northern passes, and the line of the Missouri, and the Columbia, by the South pass. This question of land or water transportation, is one of exceeding consequence, looking to the interests of the population of the States and Territories bordering on the Missouri river.

The following tables give the distances by the northern route, and the route by the South pass to Walla-Walla, Vancouver, Colville, Seattle on Puget's sound, and forks of Frazer's and Thompson's rivers:

St. Louis via Missouri and pass of 47th parallel to Vancouver.

St. Louis to Fort Benton	2,415	miles	by water.
Fort Benton to mouth of Palouse ..	450	"	by land.
Mouth of Palouse to old Fort Walla-Walla	81½	"	by water.
Old Fort Walla-Walla to Vancouver	210	"	by water.
Of which 450 miles by land and 2,706 by water—in all............	3,156½	"	

St. Louis via South pass to Vancouver.

Distance up Missouri to St. Joseph	480	by water.
St. Joseph, by South pass, to old Fort Walla-Walla	1,755	by land.
Old Fort Walla-Walla to Vancouver	210	by water.

Giving an aggregate of 690 miles by water and 1,755 miles by land—in all 2,445.

St. Louis by Northern pass to Colville, and forks of Thompson's and Frazer's rivers.

St. Louis to Fort Benton	2,415	by water.
Fort Benton to Colville	480	by land.
Thence to Forks	290	"

Making an aggregate of 2,895 miles to Colville, and 3,285 miles to forks of Thompson's and Frazer's rivers; of which only 480 miles are by land to the first point, and 790 to the second point.

St. Louis by South pass to Colville, and forks of Thompson's and Frazer's rivers.

St. Louis to St. Joseph	480	miles.
St. Joseph to New Fort Walla-Walla	1,730	"
New Fort Walla-Walla to Colville	180	"
Colville to forks Thompson's and Frazer's rivers	200	"

or 480 miles by water, and 2,200 by land.

St. Louis by Northern pass to Seattle.

St. Louis to Fort Benton	2,415	miles.
Fort Benton to Seattle	720	"

St. Louis by South pass to Seattle.

St. Louis to St. Joseph	480	miles.
St. Joseph to old Fort Walla-Walla	1,755	"
Old Fort Walla-Walla to Seattle	240	"

or 480 miles by water, and 1,999 by land.

But it is practicable to follow the route of Clark's fork to Colville, and make use of a reach of its navigable waters.

The river from Horse Plain to below the Pend d'Oreille lake, is navigable by boats and steamers.

Recollect that here we have those rich gold mines to which I have referred.

The distances from Fort Benton to Colville, by the route of Clark's fork, are as follows:

Fort Benton to Horse Plain, by cut-off from Blackfoot valley to the Jocko tributary of Clark's fork...	270½	miles	by land.
Thence down Clark's fork to old Pend d'Oreille mission	195	“	by water.
Thence by land to Colville...........	60	“	by land.

or 330½ miles by land, and 195 by water.

Steamers drawing from twenty to twenty-four inches of water, can run on a reach of eighty miles of this distance in low water, and a much longer portion of it in high water. There are two short portages on the remaining portion of the distance at low water.

I have probably gone into this question of comparative distances at this time with sufficient detail.

I wish now to make a few remarks as to the practicability of railroad routes north of the 49th parallel.

If you will look at the map, you will see that Seattle is the easternmost point, of all the harbors of that system of waters in American and British territory on the northwest, which have an entrance to the ocean by the Straits of San Juan de Fuca; that north of Seattle the coast tends somewhat rapidly westward; so that, assuming either St. Paul's or the western end of Lake Superior as the eastern terminus, the air-line to any harbor north of Seattle will be longer than an air-line to Seattle. It is obvious also from the inspection of the map, that to reach the base of the Rocky mountains, the course must be longer than to reach the base of the mountain by the route of the forty-seventh parallel, for the air-lines are longer, and it is not possible, from the course of the streams, that there is less deflection from a straight line. The very first link from St. Paul's to

Pembina gives a greater northern deflection from the course than any by the northern route.

The air-line distances from the base of the mountains, in the neighborhood of the Saskatchawan, to any part of British Columbia, will be longer than those from the base of the Rocky mountains, in the forty-seventh and forty-eighth parallels, to Seattle.

The following table gives the air-line distances from Superior City and St. Paul's to Seattle, on Puget's sound, Vancouver, on the Columbia river, Fort Benton and Pembina; from Fort Benton, to Seattle and Vancouver; from Edmonton to Pembina, and the mouths of Frazer's and Salmon rivers, in British Columbia. Salmon river was struck by Sir Alexander McKensie, in his trip to the Pacific, in 1793:

	Seattle.	Vancouver.	Fort Benton.	Pembina.	Mo. of Frazer R.	Mo. of Salmon R.
Superior City.	1,412	1,455	867	276		
St. Paul's.....	1,403	1,435	859	339		
Fort Benton..	545	592				
Edmonton	....	....	....	767	540	646
Pembina	....	....	....	....	1,176	1,377

From which we deduce the following facts: The air-line distance from Superior City to Fort Benton, is 867 miles, against 1,043 miles from Superior City, via Pembina, to Edmonton; from St. Paul to Fort Benton 859 miles, against 1,106 from St. Paul, via Pembina, to Edmonton; and that the air-line distances from Fort Benton, to Seattle and Vancouver are respectively 545 and 592, against 540 and 646—the air-line distances from Edmonton to the mouths of Frazer's, and Salmon rivers. The air-line distances from Superior City and St. Paul's, via Fort Benton, to Seattle, are 1,412 and 1,404 miles, against 1,646 and 1,752 miles—the air-line distances from St. Paul's, via Pembina and Edmonton, to the mouths of Frazer's and Salmon rivers, and against

1,583, and 1,689 miles, the air-line distances from Superior City, via Pembina and Edmonton, to the mouths of Frazer's, and Salmon rivers.

Thus, the air-line distances from St. Paul's and Superior City to the Pacific, are from 171 to 348 miles shorter by the route of the 47th parallel, than by the routes through British Columbia and the Saskatchawan.

Consider the course of the rivers on the route of the forty-seventh and forty-eighth parallels. Look at the Missouri and Clark's fork, look at the general course of the Spokane, Bitter Root, and St. Regis de Borgia rivers, and see how, by careful exploration, a nearly due east and west connection has been made, between the Flathead country and the great plain of the Columbia. This interior plain enables us to lay a comparatively straight line across it, from the mountain region of the Bitter Root, to the Cascade mountains. Can it be so in British Columbia? The streams run nearly north and south, and are separated by high mountain spurs. If use is made of the Kootenay pass, then the route must either go south of the 49th parallel, or it must cross the dividing ridge between the Kootenay and the main Columbia, giving one more chain to cross than the route by the Athabasca portage.

It is not possible that a course can be laid across the streams and dividing ridges from the base of the mountain passes north of the 49th parallel, which, starting from Lake Superior and St. Paul's, will not be several hundred miles longer than the northern route. These are obvious and natural inferences, drawn from what we know of the geography of the country. We cannot speak positively as to what pass the British route will cross. I understand that Col. Paliser, in the service of the British government, crossed the Kootenay pass the last summer on his way to the Pacific, charged with an exploration of the country.

The following table gives the sailing distances from the principal ports of Asia to those of our western coast; from which it will be seen, that Seattle's average distance from the ports of Asia is twenty-five miles less than Vancouver's, sixty-three miles less than San Francisco, 368 miles less than San Diego, and sixty-five miles less than Mazatlan. As regards the four ports, the mouth of the Amoor, Shanghae, Canton, and Calcutta, the average distances are respectively 54, 206, 532, 1,212 miles less than to the other ports.

	To Seattle, miles—	To Vancouver, miles—	To San Francisco, miles—	To San Diego, miles—	To Mazatlan, miles—
From Amoor..........	3,850	3,895	4,110	4,520	5,390
From Shanghae......	5,140	5,215	5,430	5,830	6,700
From Canton	5,900	5,975	6,140	6,550	7,380
From Calcutta.........	8,730	8,805	8,970	9,380	10,210
From Melbourne.....	7,280	7,205	6,930	6,990	7,125
From Sandwich Is...	2,380	2,305	2,050	2,190	2,835
Average distances....	5,542	5,567	5,605	5,910	6,607

If we look to European connections, the following table gives the distances from Liverpool, Havre, and Bremen, to Halifax, St. John's, Portland, Boston, and New York:

	To Halifax.	To St. John's.	To Portland.	To Boston.	To New York.
From Liverpool........	2,430	1,960	2,750	2,800	2,970
" Havre	2,540	2,070	2,860	2,910	3,080
" Bremen	3,080	2,610	3,400	3,450	3,620

There is a scheme on foot of a railroad communication from both Halifax and St. John's to Quebec. The distance from Halifax to Quebec will be 635 miles, and from Montreal 803 miles, and from St. John's to Quebec about the same distance; making the entire distance by railroad, from Western connections, 511 miles shorter to Portland than to Halifax and St. John's. This great increase of distance cannot compensate for the less ocean distance from the two British posts. We thus stand in this strong position; the great water-line of the lakes, and its system of canals and rivers, has the shortest railroad connections with American ports, both on the Pacific and Atlantic coasts; making Puget's Sound the great port for all seasons of the year, and Portland the winter port of the Canadas, and the depot for the business which will pass over the rail at all seasons of the year.

Mr. President, I did not suppose, when I entered upon this subject, that I should occupy so much time. There are other subjects that I desire much to dwell upon, in regard to which I have made a most careful examination. Since I accepted the invitation of your committee to address your society on the subject of the Northwest, I have endeavored to exhaust all existing information respecting the climate of this great region of country.

I will refer for a single moment to the isothermal lines laid down upon this map.

In constructing this isothermal map, the curves have not been reduced to the level of the sea, but have been laid on the natural surface of the ground. They have been deduced from the observations of temperature brought down to the present time. This method, though not strictly correct, will be near enough for practical purposes. The rolling character of a country will make it impossible to arrive at perfect accuracy in establishing the isothermal curves of the natural surface. But it is not probable that the error in any case will exceed one degree.

The altitudes of important points, as the passes of the Rocky, Bitter Root, Cascade, and Sierra Nevada mountains; important key points, as Fort Union, Fort Benton, Fort Laramie, Salt Lake, Cantonment Stevens, of the large valleys and prairies, are laid down.

To construct the isothermal chart reduced to the level of the sea, the result of observations at a given point are modified by the formula that every one thousand feet in altitude is equivalent to a difference of three degrees in temperature. Thus an increase of three degrees for every thousand feet of altitude will, applied to the several points named, furnish data by which the isothermal curves reduced to the level of the sea can be constructed.

Let me call your attention to the remarkable fact, that as you go westward from the Mississippi the climate rapidly becomes milder; that though the Missouri river takes a great course northward, the mean winter temperature of Fort Benton is ten degrees higher than Fort Pierre, though the latter is more than 1,000 feet lower, and three degrees further south than the former. The climate of the western coast, is very similar to that of the western coast of Europe.

Examine, Mr. President, for one moment, that country stretching from Wisconsin through Minnesota to the Red river of the North, through which American, and English, and Canadian captalists are now projecting great lines of railroad communication to reach British Columbia. And unless the Congress of the United States can cease its discussions, and venture upon action, even our people in the North-west will, in self-defence, have to join hands with the Canadas, that they may have a passage to the Pacific, even though it be on British soil, and cause to grow up a great commercial and controlling British port on the western coast. These facts are full of significance. They should dissipate doubts, and impress us with the importance of rising up to the height of this great argument, and with faith and steadiness enter upon, and accomplish the work of binding together the shores of our great oceans.

APPENDIX.

The following table gives the lines in detail, and on several routes, as regards some of the most importants ports. The least distance has been in each case taken.

SHORTEST TRAVELLED ROUTES.

RAILWAY ROUTES.

Portland, Me., to St. Paul's, Minnesota.

Grand Trunk Railroad—Portland to Montreal	292	miles.
Montreal to Toronto	333	
*Toronto to Sarnia	180	
Detroit and Milwaukie Railroad—*Sarnia to Grand Haven	280	
Grand Haven steamers—Grand Haven to Milwaukie	75	
La Crosse and Milwaukie Railroad—*Milwaukie to St. Paul's	325	
		1,485

Portland to St. Louis.

Portland to Montreal	292
Montreal to Toronto	333
Toronto to Hamilton	38
Hamilton to Windsor	186
Detroit to Lake Station	260
Lake Station to Joliet	45
Joliet to St. Louis	245
St. Louis to Portland	1,399

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*Unfinished.

New York to St. Paul's, via

Hudson River Railroad—New York to Albany..	144	miles.
New York Central—Albany to N. Falls.........	305	
Great Western Canal—N. Falls to Detroit or Windsor...	229	
Michigan Central—Detroit to Chicago...........	284	
Chicago, St. Paul's and F. D. L. Railroad—*Chicago to St. Paul's............................	400	
	——	1,362

1114
1218

Boston to St. Louis, via Chicago.

As above—Boston to Chicago.....................	1,018	
Chicago and St. Louis—Chicago to St. Louis..	256	
	——	1,264
New York to St. Louis, as above.........................		1,208

Boston to St. Paul's.

Western Railway—Boston to Albany.........	200	
As above—Albany to St. Paul's................	1,218	
	——	1,488

Philadelphia to St. Paul's, via

Pennsylvania Central—Philadelphia to Pittsburg..	353	
Pittsburg, Fort Wayne and Chicago—Pittsburg to Chicago...	471	
Chicago, St. Paul's and F. D. L.—*Chicago to St. Paul's...	400	
	——	1,224

Baltimore to St. Paul's, via

Northern Central—Baltimore to Harrisburg...	84	
Pennsylvania Central—Harrisburg to Pittsburg.	247	
As above—Pittsburg to St. Paul's...............	871	
	——	1,202

Washington to St. Paul's, via

Baltimore & Ohio—Washington to Baltimore.	38	
Baltimore to St. Paul's...	1,202	
	——	1,240

Philadelphia to Chicago, as above	824	miles.
Baltimore to Chicago "	802	
Washington to Chicago "	840	

Charleston to St. Louis, via

South Carolina Railroad and C.—Charleston to Chattanooga	446	
Memphis and Charleston—Chattanooga to Corinth	217	
Mobile and Ohio—*Corinth to Cairo	175	
Illinois Central—Cairo to Sandoval	114	
Ohio and Mississippi—Sandoval to St. Louis	61	
	——	1,013

Charleston to St. Paul's, via

As above—Charleston to Cairo	838	
Illinois Central—Cairo to Dunlieth	451	
Mississippi River—Dunlieth to St. Paul's	275	
	——	1,564

New York to St. Louis via Dunkirk and Indianapolis.

New York and Erie Railroad—New York to Dunkirk	469	
Lake Shore—Dunkirk to Cleveland	143	
Cleveland, Columbus and Cincinnati—Cleveland Crest line	67	
Indiana and Bellefontaine—Crest line to Indianapolis	206	
Terre Haute and Richmond—Indianapolis to Terre Haute	73	
Terre Haute and St. Louis—Terre Haute to St. Louis	183	
	——	1,141

New York to St. Louis via Philadelphia.

New Jersey Railroad and Transportation Company—New York to Philadelphia	93	
Pennsylvania Central—Philadelphia to Pittsburg	353	

Cleveland and Pittsburg—Pittsburg to Wheeling	93	miles.
Central Ohio—Wheeling to Columbus	141	
Columbus and Xenia—Columbus to Xenia	55	
Indiana Central—Xenia to Indianapolis	124	
As above—Indianapolis to St. Louis	256	
	——	1,115
Philadelphia to St. Louis, as above	1,022	

New York to St. Louis via Baltimore and Ohio, Marietta and Cincinnati, and Ohio and Mississippi Railroad.

As above—New York to Philadelphia	93	
Philadelphia, Wilmington and Baltimore—Philadelphia to Baltimore	98	
Baltimore and Ohio—Baltimore to Marietta	383	
Ohio and Mississippi—Cincinnati to St. Louis	340	
	——	1,114
Baltimore to St. Louis, as above	923	
Washington “ “	943	

Savannah to St. Louis, via

Georgia Railroad—Savannah to Chattanooga	431	
As above—Chattanooga to St. Louis	567	
	——	998
Savannah to St. Paul's, as before	1,549	
Savannah to Chicago “	1,178	
Charleston to Chicago “	1,193	

Mobile to Chicago, via

Mobile and Ohio—*Mobile to Cairo	540	
Cairo to Chicago	355	
	——	895
Mobile to St. Louis, as before	715	

Mobile to St. Paul, via

Mobile and Ohio—*Mobile to Cairo	540	
Illinois Central—Cairo to Dunlieth	451	
Mississippi river—Dunlieth to St. Paul's	275	
	——	1,266

New Orleans to St. Louis, via
N. O. I. and G. N. Miss. C. and M. O. R. R.—

*New Orleans to Cairo	625	miles.
As above—Cairo to St. Louis	175	
	——	800
New Orleans to Chicago, as above	980	
New Orleans to St. Paul's, as above	1,351	

Gov Stevens was a man of great courage he did not know such a thing as fear, I ~~on~~ asked him [illegible] [illegible] if he ever had any trouble with any Southern man or if he ever was challenged to fight a duel. (Never but once) ~~[illegible]~~ I accepted and being the challenged party I had the choice of weapons. I chose [illegible] ~~[illegible]~~ pistols, Each standing back to back [illegible] [illegible] [illegible] [illegible] [illegible] my windows and looked out.

The reason Stevens gave for this was that he was unaccustomed to the use of pistols

PACIFIC RAILROAD—NORTHERN ROUTE.

Completed August 8 1883

LETTER

OF

HON. ISAAC I. STEVENS,

DELEGATE FROM WASHINGTON TERRITORY,

TO THE

Railroad Convention of Washington and Oregon,

CALLED TO MEET AT

VANCOUVER, W. T., MAY 20, 1860.

WASHINGTON:
THOMAS McGILL, PRINTER.
1860.

LETTER.

WASHINGTON CITY, *April* 3, 1860.

To the President of the Railroad Convention called
to meet in Vancouver, W. T., May 20, 1860*:*

SIR: I propose in this communication to present some general views in regard to the Pacific railroad, and especially to set forth the character of the northern route. It has become now fixed in the public mind, that the national defence, the development of our interior, the availing ourselves of our geographical position in order to control the trade of Asia and the Pacific, require that early and prompt measures should be taken to establish communication by railroads from the Mississippi to the Pacific ocean. The entire aspect of the interior is most rapidly changing. The progress of that interior within the last two years has been greater than its whole previous progress. The successful accomplishment of the overland mail on the southern route is now throwing a population upon that route. Pike's Peak and the silver mines of Nevada, in connection with Utah, are settling large areas in the very heart of the central route. The interior of the northern route, the Walla Walla, Spokane, and Colville country, have already large settlements, which this very year will number many thousand souls. The opening of the navigation of the Missouri to Fort Benton, and of the Columbia and Snake rivers, to Priest's Rapids, and the mouth of the Palouse, in connection with the overland wagon road from Fort Benton to the Walla Walla, have established an easy and practicable communication *via* the northern route. In considering this question I shall not look to the present capacities of the country to support an overland communication, but shall consider what all know will be the condition of the country when these communications are completed, and the roads are put in operation. The building of a Pacific railroad will probably be a work of some years, say ten years. It is not to be doubted that in ten years not only will the population on the Pacific seaboard be trebled or quadrupled, but that there will be a very large population along the line of any route that may be selected for the location of a railroad. It must also be borne in mind that in the case of more than one road, there will be no antagonism between the roads in reference to way travel. Each road will drain a very wide extent of country bordering upon it—a country at least three hundred miles in width; so that if the intermediate population is simply a pastoral one, the country will, when thus settled, afford a population to the running mile of road greater than the way population of any road in the United States. The Pacific railroad, like all other roads, must have a great dependence on its way travel; and it can hardly be doubted that when a road is completed, the way travel will be very large. It must be borne in mind also, that the extraordinary progress of the interior within the last two years, has been made with no immediate prospect of a Pacific railroad, and with none of the aids of excitement which the starting and commencing of such an enterprise would furnish. If Congress should adopt a system, and if a road or roads should be commenced, it will throw a vast number of laborers on the several routes, and will lead at once to a very much heavier movement of our people upon them. I desire to urge the project of building three roads to the Pacific Ocean. It is manifest that one route is unequal to the public exigencies, and would be unjust to the people of the country. If three roads are built, the government will be under the same necessity of using the three roads as it would be if using but a single road. Over each road it must carry the mails, and must transport troops, supplies, and munitions of war. If but one road is built, to wit, over the central route, the government would still be obliged to provide for the transportation of its mails over the southern route and the northern route, and it would have to transport troops over each of these two routes. Any argument, therefore, based upon the defence of the country, applies with equal force to three as to one route.

With these preliminary observations, I will address myself to the immediate object of this communication. I contend that the northern route is eminently deserving of the encouragement and the support of the government. It is not a fiction, the great vision of Columbus. It is a fact, that if we stand firmly on our geographical position, and show a wise forecast in the measures looking to the development of our country, we will have the means of diverting a large portion of the trade of Asia, and causing it to flow through our own land. The experience of railroads within the last few years has demonstrated the fact that much freight will go on railroads, which could with equal safety and without deterioration go by water, when time can be saved. Much of the cotton for the New England factories passes up the Mississippi, and is transported thence by railroad, in order to gain time and save the interest on money. This course enables the consumer to purchase from day to day, as he wants the article, and he is not required to keep so large supplies on hand as by the former mode of doing the business. Such will be the case with a vast quantity of Asiatic products. All their costly articles, as silks, the higher priced furniture, spices, furs, &c., instead of making the circuitous voyage around either cape, will be taken by steamer to some one of our Pacific ports, thence overland on the proposed Pacific railroad, and thence to Europe. This will especially be the case with teas, which deteriorate by crossing the tropics, and then being kept long on shipboard. The teas of Russia, which are famed for their superior flavor, are taken overland, through Siberia, at a vast expense, and have been taken in that way for many years. We will then assume, what we think experience has demonstrated, that a Pacific railroad through our borders will have a large way population to sustain it, and will have an immense business in the way of freights in the merchandise of Asia. It will also be the line of movement of population between Asia and Europe, as well as between these continents and our own interior. As the channels of commerce are established, and greater liberality prevails in the management of the affairs of China and the other nations of Asia, it cannot be doubted that this movement of population, which will be hastened all the time the road is being constructed, will become a very great movement by the time the road is in operation.

Looking to all these elements of business—looking to the public necessities, and especially the business which the government will have to transact, we will now consider some of the leading facts touching the geographical position and the natural advantages of the northern route. This route, as has been frequently observed, seems to be pointed out by nature, connecting the great inland sea of Puget Sound with the great basin of the St. Lawrence, which furnish a water line stretching more than half-way across the continent. It has been called the *extreme* northern route; but looking to this great basin of the St. Lawrence, to the extensive country between it and the Rocky Mountains, watered by the Upper Mississippi, the Missouri, the Red River of the North, the Saskatchawan, and their several tributaries, and to the rapidly-developing communities of British Columbia and Vancouver's Island north of our parallel, and of the State of Oregon and the Territory of Washington south of the parallel,—it is a route central to a vast scope of country fitted to be the abode of civilized man, and which is most rapidly rising in importance. Puget Sound, by which designation is included the whole body of waters flowing into the ocean at the Straits de Fuca, is an inland sea equal in extent and length of shore line to the Mediterranean,—infinitely surpasses the Mediterranean in the safety of its navigation, in the number, capacity, and security of its harbors, and, equally with the Mediterranean, having obstructions neither from ice nor from dense and dangerous fogs. These waters, in connection with those of the Columbia and the main coast of the Pacific ocean north of the Columbia, and the adjacent country, are a second New England, having all the elements for a great variety of pursuits, and for a large and extensive commerce. On the coast there are cod fisheries equal to the best fisheries on the northeast coast; there is the greatest abundance of salmon and halibut; the whaling business could also be prosecuted with great success from these regions. There is coal on Puget Sound acknowledged now to be the best on the coast, and which will probably be suitable for the purposes of ocean navigation by steamers. But our lumber business admits of a development greater than that of any other portion of the country or of the known world. On the sound alone, we now manufacture one hundred millions a year, and we send more than half of this to foreign ports. We have a large business in spars and piles; we manufacture shingles and laths; and this business must very rapidly increase. We have foundries and ship-yards; we are building steamers and sailing vessels of considerable size, and craft of all descriptions, down to the ordinary sailing or row boat. We have large manufacturing advantages. Our country is a most excellent grazing and agricultural country. With all these various advantages, therefore, west of the Cascade mountains—commercial, manufacturing, agricultural, &c.—we shall have to seek the markets of the Pacific in order to give proper scope to our enterprise and industry. If we consider the interior of Washington and Oregon, we find that experience has demonstrated what has heretofore been confidently predicted, that there is a very great extent not only of fine grazing but fine arable land; and the settlements which have sprung up within the last year in the Walla Walla, the Spokane, and the Colville country, to which allusion has already been made, and the excellent character of the intermediate country, must satisfy all persons that a large population will occupy that region, even before the necessary surveys could be made to locate a Pacific railroad through it.

British Columbia has become a fixed fact. The products of its mines are steadily increasing. Roads and communications are being established, connecting the interior of British Columbia with the coast. Even during the past winter, the yield of gold has been steadily going on.

It has been ascertained by exploration, that there is a very extensive gold region east of the Cascades, in Washington Territory, and exceedingly rich deposits have been actually worked on the Similkameen and are known to exist in other localities. The prospecting operations of the present year will unquestionably develop the capacity of the country in its remunerating gold mines, and the survey of the boundary will also furnish some accurate information in regard to the silver, copper, quicksilver, platinum, lead, and sulphur known to exist along and south of the 49th parallel. The formation of this portion of the territory is similar to that of British Columbia, and the development of their mineral wealth will go on together.

Thus we find on the northwest a great inland sea, unsurpassed on the shores of all the oceans for the purposes of commerce, lending itself to the development both of these United States and of British America. What is the position of this great inland sea to Asia? If we look on the map, we will ascertain that it is the nearest point on our whole Pacific coast to the ports of Asia; but looking to the prevailing winds, it will be seen that it is nearer than San Francisco by the entire distance coastward between San Francisco and Puget Sound; for the prevailing winds are such, that vessels coming from Asia have to make our coast near the entrance of the Straits de Fuca, and proceed thence to San Francisco. Is it objected, or is it urged that San Francisco is the great commercial centre, and must for all time to come be the great commercial *entrepôt* of the Pacific, and that having the start of Puget Sound, no point on its waters can ever rise into importance? What is the history of that Mediterranean to which we have compared it? How many cities on its shores have risen and fallen, and given place to other cities, for century after century! And after the cities of the olden time had fallen into decay, people of enterprise founded a great city in a marsh, and made it the commercial mistress of the world; and that city has now in its turn given place to other cities. What is the experience of our own Atlantic seaboard? Was New York always the great metropolis of the Atlantic? Time was when Newport, in Rhode Island, was the commercial mistress of our thirteen colonies; and New York did not become first until after a struggle of more than a hundred years. But have we simply New York on our Atlantic seaboard? Where are Portland, and Boston, and Philadelphia, and Baltimore, and Norfolk, and Charleston, and Savannah—all commercial centres, and more than half of them larger at this present day than the city of San Francisco? Show me a spot that Nature has pointed out as fitted for the seat of commerce, and I will show you a point where the enterprise of the American people will found a great city, and establish a great commerce. It is simply a question of time. It is true that San Francisco occupies a more central position in regard to our territorial domain on the Pacific coast than Puget Sound. It is true that San Francisco is the centre of a much greater local population at the present time;

but as regards the great carrying trade across the continent—one of the largest elements in maintaining a Pacific railroad—I am prepared to show that Puget Sound presents the greatest advantages, and is the most central. The following table* will show the distances from Puget Sound to the head of Lake Superior, to St. Paul, and to the principal cities on the Atlantic and Gulf coasts; and also the distances of these same points from San Francisco by the central route:

	Seattle, via St. Paul.	Benicia, via St. Louis.	Differences in favor of nor'n route.
St. Paul	1,764		
Lake Superior	1,750		
Chicago	2,164	2,738 2,481 *a*	317
Portland	3,249	3,831	582
Boston	3,352	3,696	344
New York	3,126	3,546	420
Philadelphia	2,988	3,454	466
Baltimore	2,966	3,355	389
Washington	3,004	3,375	371
Charleston	3,328	3,445	117
Savannah	3,313	3,430	117
Mobile	3,030	3,147	117
New Orleans	3,115	3,232	117
Averages	3,131.1	3,453.1	

a Via Rock Island.

The distance from Benicia to St. Louis is 2,482 miles.

Thus the average distance from Seattle, via St. Paul, to the principal ports of the Atlantic and gulf, is 316 miles less than the average from Benicia via St. Louis to the same points. This saving of distance via St. Paul ranges from 117 miles, as in the case of New Orleans, to 582 miles, as in the case of Portland.

The following table* shows that the distances from San Francisco to Atlantic ports are much greater on the central than on the southern route:

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* Roads either constructed or in process of construction have been used to construct these tables. See Appendix to Address on the Northwest for the distances in detail.

ATLANTIC PORTS.	*Central route.* Benecia via St. Louis.	*South'n route.* San Francisco via 32d parallel.	Differences in favor of sou'n route.
Portland	3,831	3,661	170
Boston	3,696	3,554	142
New York	3,546	3,359	187
Philadelphia	3,454	3,272	182
Baltimore	3,355	3,174	181
Washington	3,375	3,136	239
Charleston	3,445	2,974	471
Savannah	3,430	2,959	471

Thus, the distances to Atlantic ports via the southern route, are 142 to 471 miles less than by the central route. The distances on the northern route average ninety miles less than on the southern route.

If equated distances are compared, the differences in favor of the northern over the central route will be increased 137 miles, and over the southern route 310 miles. And the average distance via the northern route to Atlantic ports will be 483 miles less than by the central route, and 400 miles less than by the southern route.

These water lines of the Gulf of Mexico and the great lakes are controlling facts in the location of a continental railroad. Both the northern and southern routes combine the advantages of a much shorter railroad connection with the great ports of the Atlantic and Gulf, and of striking their respective water lines at much less distances than the central route. Thus, the great lakes are struck on the northern route at more than seven hundred miles less distance than by the central route. Thus, whether the transportation from the Pacific to Atlantic ports be entirely by rail, or whether partly by water and partly by rail, (and it will unquestionably go both ways,) or whether the overland transportation to Europe strikes these water lines at once, and thence is had on shipboard direct to Europe, or, using the rail the whole distance to some Atlantic port, the shipment is thence made to Europe, in all the cases the advantage in the way of freight is invariably against the central route.

These facts show that not only is Puget Sound nearer to Asia than is San Francisco, but that the overland distances to the principal cities on the Atlantic coast, and especially the great lakes, is much less than the distances from San Francisco to these same points either by the central or southern route. Then it is obvious that the whole trade of Asia which passes over our continent to Europe must go by the northern route. But this is not the full extent of the superiority of the northern route. On that route the grades are easier than on any other route ; and the grade is one of the controlling elements in the cost of carrying freight. The cost of carrying freight on railroads varies from one-half a cent to two and a-half cents per ton per mile. Where a heavy business is done, and the grades are light, the cost has been as low as one-half a cent per ton per mile ; but where grades are high, the cost will very rapidly increase, even in some cases as high as 2½ cents per ton per mile.

Nearly the whole of the country on the northern route is susceptible of continuous occupancy by our people. There is no such thing as as a desert, properly so speaking, on the entire route. There are gaps or intervals, where it is simply a grazing country. There are portions of the country occupied by mountain ranges, which would not admit of profitable cultivation ; but as a whole, the country is fitted for settlement and occupation, and must be settled and occupied at an early day. Or, to go more into details : From Breckenridge, on the Red river of the north, to the Divide of the Rocky mountains, the route passes through strictly a cultivable country, capable of continuous settlement except for about 150 miles, in three several sections of about equal lengths. On this portion you can plant agricultural settlements, at points sufficient for railroad or mail stations. From near the Divide of the Rocky mountains, the country is capable of continuous settlement to within twenty miles of the Divide of the Bitter Root mountains. The eastern half of the great plain of the Columbia, the northern and the southern portions, consist of rich river valleys and fertile tablelands. A portion of the western half will not furnish arable land for continuous settlements. Between the Columbia and the Cascade mountains, the line is flanked on the south by a large body of fertile land, and passes immediately through a fine grass country, and for at least half the distance through an excellent cultivable country. From the Cascade mountains to the Sound, the line passes through a continuously cultivable country. The whole intermediate country between the headwaters of the Missouri and the great plain of the Columbia admits of continuous settlement, except about forty miles on the highest part of the Rocky mountains, and thirty miles in the highest part of the Bitter Root mountains.

The railroad line could be laid over the great plain of the Columbia so as to pass over a continuous cultivable country to the Columbia, except for a few miles ; but to cross north of the mouth of the Snake river, which is desirable to avoid detour, it will pass over about fifty miles of country not adapted to continuous cultivation. There are about fifty miles of uncultivable country between the main Columbia and Puget's Sound. Thus, in the whole distance from Breckenridge to Seattle, a distance of 1,544 miles, the route passes through only about 320 miles of uncultivable country. East of Breckenridge, to St. Paul and Lake Superior, the country is exceedingly rich, and inviting to the settler.

These views of the country, and which I have presented in my official reports, are being amply confirmed by experience; and the analyses of the soils procured by the recent geological examination of this country by Dr. Evans have demonstrated that it has all the elements required for crops. Indeed, generally speaking, there is an unusual quantity of fertilizing materials in the soil. On the upper waters of Snake river the formation is trap and basalt, and the soil is sterile and unfit for cultivation; but north of Snake river, in the parallels of the region whose waters flow into Clarke's Fork, there is limestone on both sides of the Rocky mountains, and westward, nearly to the great bend of the Columbia. The general character of the Flathead country, and the extraordinary change which takes place in passing from the northern route to Snake river, some two hundred miles distant, is shown in the following extracts from Lieut. Mullan's report:

> "The valley and mountain slopes are well timbered with an excellent growth of pine, which is equal in every respect to the well known and noted pine of Oregon. The advantages, therefore, possessed by this section, are of great importance, and offer peculiar inducements to the settler. Its valley is not only capable of grazing immense bands of stock of every kind, but is also capable of supporting a dense population. The mountain slopes on either side of the valley and the land along the base of the mountains afford at all seasons, even during the most severe winters, grazing ground in abundance, while the mountains are covered with a beautiful growth of pine. The provisions of nature here are, therefore, on no small scale, and of no small importance; and let those who have imagined—and some have been so bold as to say it—that there exists only one immense bed of mountains from the head waters of the Missouri to the Cascade range, turn their attention to this section, and let them contemplate its advantages and resources, and ask themselves, since these things exist, can it be long before public attention shall be attracted and fastened upon this hitherto unknown and neglected region? Can it be that we should have so near our Pacific coast a section of country of hundreds of thousands of acres that will remain forever untilled, uncultivated, totally neglected? It cannot be. But let a connexion, and that the most direct, be made between the main chain of the Rocky mountains and the Pacific—and it can be done—and soon will these advantages necessarily thrust themselves upon public attention, and open to the industrious and persevering avenues to wealth and power. Again, this section connects with another of equal, if not superior, importance, that of the Cœur d'Alêne country, which again connects directly, by a beautiful section, with the country at and near Walla Walla; thus showing that from the main chain of the Rocky mountains to the mouth of the Columbia, we possess a rich, fertile, and productive area, that needs but the proper means and measures to be put forth, and manfully employed, to be turned to private and public benefit." * * * * * * * * *

"Looking back upon our route, we saw we had followed Bitter Root river to its head, which we found from its mouth to be ninety-five miles long, flowing through a wide and beautiful valley, whose soil is fertile and productive, well timbered with the pine and cotton-wood, but whose chief characteristic and capability is that of grazing large herds of cattle, and affording excellent mill sites along the numerous streams flowing from the mountains. The country thence is watered by tributaries to the Missouri and its forks, to the range of mountains separating these waters from those of the Snake river, or the south branch of Lewis' fork of the Columbia, and is also fertile, but its characteristic feature is the great scarcity of timber for any purpose, the willow and wild sage being used for fuel along the whole route. The geological formation of this section belongs to the tertiary period. The capability of this broad area, however, for grazing, is excellent. It is a great resort at present for all Indians in the mountains, the mountains and valleys affording a great abundance of game, consisting of elk, bear, deer, and antelope, while the numerous rivers and streams abound in fish and beaver. The latter are still caught in large numbers on the head waters and tributaries of the Missouri, but are not so anxiously sought after as years back, owing to the great depreciation of value in the market east. The whole country is formed of a series of beds of mountainous ranges or ridges, with their intervening valleys, all of which are well defined and marked, the decomposition and washings of the rocks of the mountains giving character to the soil of the valleys, which may be termed, as a general thing, fertile. The geological formations along the Jefferson fork and its principal tributaries are limestone and conglomerate rock. From the range called the Snake River divide, the whole character of the country is completely changed. Here the geological formation is basaltic and volcanic principally. None of the numerous streams and rivulets flowing from the mountains along the route we traveled emptied into the Snake river, but either sunk into the ground, or formed small lakes in the broad valley of Snake river. The ground in most places is formed principally of sand; and where large beds of basalt are not found, the ground is of a dry, absorbing nature, through which the water sinks, at times bursting out again. It was somewhat singular, that for sixty miles above Fort Hall, along the main stream of Snake river, we did not cross but one tributary, and that coming in from the south, while none came in from the north; all of the streams, as before mentioned, either forming lakes or sinking into the ground. This section is also noted for the great scarcity of timber, and the immense plains of wild sage; which is so abundant, that it merits the name of the sage desert of the mountains. It extends for many miles in length and breadth, forming an immense ocean of prairie whose sameness is only broken by the 'Three Buttes' of the valley, which rise like islands in the sea in this broad and barren area. Its whole character might be included in the word sterility."

Experience, moreover, has shown that there is moisture enough for profitable tillage. The crops that have been raised about the Dalles, at the Walla Walla, in the Nez Perces country, on the Spokane, at Colville, in the Bitter Root valley, on the Jocko, on Sun river, at Fort Benton, and at Fort Union, show that there is ample rain for moisture to insure a certain crop. I will refer gentlemen interested in this matter to my report for a minute description of this country in this respect, and especially to the forthcoming report of Dr. Evans, which will be found to be exceedingly interesting and instructive: but, before leaving this subject, I desire to say that Northern Nebraska is fully equal, and Washington Territory is much superior, to certain provinces in Southern Russia, with which they may be compared. These provinces, or governments, are Bessarabia, Kherson, Ekatherinoslaw, Taurido, (Crimea,) Stavropol, (Caucasia,) Astrakhan, and the country of the Don Cossacks, and they extend from the mouth of the Danube along the shores of the Black sea, the sea of Asov, and across the lower parts of the Don, the Volga, and the Ural into the plains of Central Asia. These all lie between latitude 49° and the Black sea, excepting Stavropol and Astrakhan, which extend south between it and the Caspian sea, latitude, 44°.

In 1851, including the government of Koursk, which lies north of latitude 49°, the population of this region, containing an area of 262,000 square miles, ranged from 98 souls to the square mile as in the government of Koursk, through the intermediate numbers of 4.98, (Bessarabia,) 38.8, (Ekatherinoslaw,) 32, (Kherson,) 26.6, (Taurido,) 17.6, (Stavropol,) 17.6, (Don Cossacks,) down to 8.8 in the government of Astrakhan. Five of these provinces produce more grain than they consume—the export of wheat being 18,000,000 bushels,—two sufficient for home consumption, and Astrakhan only imports it. The average return for the same province is six times the amount of seed sown, while for the whole empire it is only four.

In 1847, over two million bushels of potatoes were raised in the five provinces bordering on the Black sea. Beet root sugar is an important product. Large quantities of wine are manufactured, and large quantities of fruit are produced. Tobacco is grown to a considerable extent. In this region are over two millions of horses, and nearly five millions of cattle and twelve millions of sheep.

These provinces are in fact the most productive portion of Russia in Europe. Yet Nebraska will compare favorably with them in temperature, amount of moisture precipitated, the constituents of the soil, and general geographical position. Both regions are mainly regions of prairie, and large portions of each are destitute of wood. The comparison, however, in all these respects is in favor of Nebraska, and yet the population of the province Koursh is much denser than that of any of our best agricultural States of the Mississippi valley, and the average of the six provinces exceed the average of the Mississippi river States, and the population is rapidly increasing by immigration from the more northern regions of Russia.

But the comparison between southern Russia and Washington Territory is greatly in favor of the latter. The climate is much milder than in Southern Russia, and more moisture is deposited. Indeed, the climate of Washington is superior to that of any part of western New York, Michigan, Wisconsin, or Minnesota. The greater part of eastern and northern central Washington is wooded, the forest growth being large, with frequently a luxurious undergrowth.

I beg leave to quote the following from Lewis and Clarke's narrative, as descriptive of the country lying under and to the westward of the Bitter-Root Mountains. I have passed over this country in several directions, and know their description to be accurate:

When encamped in the Kookooskia valley on May 17, 1805, they say:

> "The country along the Rocky mountains for several hundred miles in length, and about fifty wide, is a high level plain, in all its parts extremely fertile, and in many places covered with a growth of tall, long-leaved pine. This plain is chiefly interrupted near the streams of water, where the hills are steep and lofty, but the soil is good, being unincumbered by much stone, and possesses more timber than the level country. Under shelter of these hills the bottom lands skirt the margin of the rivers, and though narrow and confined, are still fertile and rarely inundated. Nearly the whole of this wide-spread tract is covered with a profusion of grass and plants which are at this time as high as the knees. Among these are a variety of esculent roots, acquired without much difficulty, and yielding not only a nutritious, but a very agreeable food. The air is pure and dry, the climate quite as mild if not milder than the same parallel of latitude in the Atlantic States, and must be equally healthy, for all the disorders which we have witnessed may fairly be imputed more to the nature of the diet than to any intemperance of climate."

Proceeding eastward they reached one of the Kamas prairies on the Kookooskia, within the spurs of the Bitter Root mountains. There they encamped in a point of woods bordering the extensive level and beautiful prairie; and as the kamas was in blossom, it being the 10th of June, the surface presented a perfect resemblance to a lake of clear blue water. The country, though hilly around them, was generally free from stone, extremely fertile, and well supplied with timber, consisting of several species of fir, pine, and birch.

Another advantage of the northern route is, that it can be worked in a greater number of sections than any other route. In my railroad report of 1854, I gave a scheme, and presented a programme for building this road, which proposed making use of the waters of, the Columbia and Missouri, for transporting the workmen, and tools, and materials of all kinds, and organizing the work in corresponding divisions. One would be from Puget Sound and from Vancouver to the point where the railroad line crosses the Columbia, another from this point to the head of navigation at Fort Benton, a third from Fort Benton to Fort Union, another to St. Paul, and the western end of Lake Superior.

Thus the route can be thrown into four divisions, on each of which the work can be commenced at both ends, so that eight sections may be worked at a time, affording extraordinary facilities to hasten the construction of the road. The most difficult of these divisions, the one between the Columbia and Missouri, could be attacked almost as soon, within two or three months, as those lying on the Pacific or great lakes. It is not necessary to wait till the tunneling is done on the route, as, to establish a thorough communication for the nonce, the system of zigzags, by which the Alleghanies are scaled in Pennsylvania, can be adopted.

It is objected to the northern route that it involves excessive tunneling. This is not necessarily the case. The northern road can be located with little or no tunneling, but at a very great increase of distance.

Lieut. Mullan reports that, by his wagon pass (Mullan's or Little Blackfeet Pass) a railroad can be laid across the Rocky mountains with only a cut one hundred feet deep through the Divide, which is but half a measured mile from base to base, and that no excessive grades will be required on the eastern approach. The descent down the valley of the Little Blackfeet and Hell-Gate is exceedingly favorable. Thus, a line can be laid down from the Mississippi to Olympia, on Puget Sound, with but short and few tunnels, but which will be two hundred and seventy-six miles longer than the route by Cadotte's, the Cœur d'Aléne or Stevens' and the Snoqualmoo Passes to Seattle. We cross the Rocky mountains by the northern Little Blackfoot or Mullan's Pass, then follow down the Little Blackfoot and Hell-Gate valleys, cross over the Jocko divide to Hell-Gate, follow down Clark's fork to below the Pend d'Oreille lake, cross over to the Spokane, and, finally, after passing over the great plain of the Columbia, follow down the Columbia valley to near the mouth of the Cowlitz, and reach the Sound by the easy and practicable line of the Cowlitz and intermediate country. If, instead of a cut of half a mile through Mullan's Pass, this distance should have to be tunneled, the only remaining tunnels will be at the Cabinet, three hundred yards in length, fifty per cent. in basaltic trap, and Cape Horn, seven hundred feet in length. By this route the distance to Olympia from St. Paul will be two thousand and forty miles, against one thousand seven hundred and sixty-four miles, the distance to Seattle by the route of the tunnels.

From the great plain of the Columbia, the distance, via the Snoqualmoo Pass to Seattle, is 155 miles less than by the Columbia and Cowlitz rivers.

In both my preliminary report of 1854 and my final report of 1859, I recommended that from some point in the general vicinity of the mouth of Snake river there should be two branches—one to Seattle, on Puget Sound, across the Snoqualmoo Pass, and the other down the Columbia river to Vancouver. In justice to myself, I will state that, in my reports to the War Department, at Fort Benton, in September, 1853, I took it for granted that the route down the Columbia river was practicable, and that after making a personal examination of it myself, I actually reported it as practicable on the 19th of December, 1853. I considered it probably practicable before I left the city of Washington to commence the survey of the northern route.

To make the route a cheap and practicable freight route, it is essential to diminish both the length of the line and the gradients as much as possible. To effect this, a very considerable increase of expense might be incurred, provided the interest on the increased cost did not exceed the saving in the expense of running the line.

For this reason especially, I have urged a direct connexion with Puget Sound via the Snoqualmoo Pass; for the superiority of the route within our own borders over that in the British possessions may be lost if Puget Sound be reached by the circuitous route of the Columbia and Cowlitz rivers.

This plan will accommodate both Oregon and Washington, and will insure an extension of the Columbia river branch via the Willamette and Sacramento valleys to San Francisco. The connexion, moreover, with the several railroad systems of the States, not included in the St. Lawence Basin, and the great navigable rivers of the Mississippi valley, will be as short as a connection by the Snake river route. For the distance from Seattle and Vancouver to Chicago by the northern route, is 2,154 and 2,147 miles against 2,364 miles, the distance from Vancouver to Chicago by the South Pass and Rock Island, and against 2,182 miles, the distance from Vancouver to Rock Island. But if the equated distances be compared, the result will be still more in favor of the northern route. A ton of freight can be delivered at Chicago by the northern route for a less sum than it can be delivered at Rock Island, on the Mississippi river, by the South Pass route. Indeed, a comparison of the equated distances, the practical comparison invariably instituted by practical men, shows that a ton of freight can be taken either from Seattle or Vancouver, over the northern route to St. Paul, be placed on a steamer and delivered not only at Rock Island or St. Louis at less cost than it can be delivered at either of these points by the route of the South Pass, but it can descend the Mississippi and be delivered at any point thence to New Orleans, at less cost than a ton of freight from San Francisco, either by the central or southern route.

It has also been objected to the northern route that snow and the excessive cold weather would be an obstruction, both to the building and the running of the road. The following brief summary of information with regard to this matter is presented to show conclusively that these objections are utterly untenable.

The passes of the Rocky mountains, Hell Gate, Northern Little Blackfoot, and Cadot's Pass were crossed by parties employed in the exploration of the northern route in the months of December, January, February and March, in the years 1853–'4, and in no one of these passes did they find more than fifteen inches of snow. In the winter of 1854–'5, the Flathead Indians passed through these passes in January, February, and March; whole tribes, with their women and children, and their pack animals laden down with furs and meat. Victor, head chief of the Flathead nation, states that since the memory of the Indian, they had passed these mountains year after year through the winter months. That same winter, the party that crossed the Rocky mountains in January, went down Clark's Fork in February; they went on horseback, the sole trouble being that there were some places where the snow was deep enough to cover up the grass; but in these cases it was in the wooded portions, and 2½ feet was the greatest depth.

When they left the wooded region where it was 2½ feet deep, and came to the open prairie, the snow had entirely disappeared. In the crossing of the Cascade mountains to Puget sound, made by Mr. Tinkham, in January, 1854, the snow was but six feet for a short distance. At Fort Benton and Fort Campbell, on the Upper Missouri, ever since they were established some twenty-five years since, the fur companies have taken their goods to their winter trading posts, on the Milk and Marias rivers, in wagons, there not being snow enough for sleds.

It is obvious there can be no serious difficulty on the northern route from snow. Will there be difficulty from excessive cold weather?

There are now great lines of railroad in operation over tracts of country as cold, and even colder, than the route from Fort Benton to the shores of the Pacific. The mean winter temperature at Fort Benton, in 1853–'54, was 25°.38 above zero. The average at Montreal, on the Grand Trunk railroad, for the same year, was 13°.22, and for a mean of ten years 17°.80, above zero. At Quebec, it was, in 1853–'54, 11°.03 above zero, and for a mean of ten years 13°.30 above zero. On the great Russian railroad, from St. Petersburg to Moscow, the comparison is very similar. The mean winter temperature for a series of twenty-one years, at Moscow, is 15°.20, and at St. Petersburg, for a mean of twenty-five years, 18°.10 above zero.

At Fort Snelling, on the great lines through Minnesota from St. Paul to Pembina, and from St. Paul to Breckenridge, now actually in process of construction, the mean winter temperature of 1853–'54 was 11°.64, and the mean of thirty-five winters 16°.10 above zero. Thus in the winter of 1853–'54, an unusually cold winter, Fort Benton was 15° warmer than Montreal, 14° warmer than Quebec, 11° warmer than Fort Snelling, 10° warmer than Moscow, and 7° warmer than St. Petersburg. Looking to the Bitter Root valley, its average temperature in the winter of 1853–'54 was 24°.90, and in 1854-'55, 30°.30 above zero, making it for the two winters respectively 10° and 15° warmer than at Moscow, and 7° and 12° warmer than at St. Petersburg. In 1853–'54 it was 12° warmer than at Montreal, and 14° warmer than at Quebec. The greatest cold in the winter of 1853–'54 was 29° below zero at Cantonment Stevens. At Fort Snelling it was 36°, at Montreal 34°, and at Quebec 29° below zero, from which it is seen that on this route, the greatest cold is not equal to the greatest cold on the route of the Grand Trunk railroad of Canada. The same fact is unquestionably true of the great artery of Russia from Moscow to St. Petersburg. The average temperature was below zero twelve days at Fort Benton, ten days at Cantonment Stevens, eighteen days at Fort Snelling, eighteen days at Montreal, and twenty-three days at Quebec. Thus there were more cold days on the line of the Great Trunk railroad, and of the roads in Minnesota, than on this northern route. Moreover, at Fort Benton the thermometer was forty-three out of ninety days, and at Cantonment Stevens thirty-two out of ninety days above the freezing point, against only six days out of ninety at Fort Snelling, five days out of ninety at Quebec, eight days out of ninety at Montreal, and eighteen days out of ninety at Albany—all in the winter of 1853–'54.

Indeed, I doubt not that the blinding sand storms on the southern route would be a much greater obstacle to the running of the cars than the snow storms or the cold on the northern route. Now, the British government are looking to an overland communication with the Pacific. They have redeemed British Columbia from the vassalage of the Hudson's Bay rule, and are about redeeming the Saskatchawan country. All our information goes to establish the fact that there is a very large scope of arable country through the Saskatchawan region, and we know that the development of the mineral wealth of British Columbia will also tend to develop its agricultural resources. The British government have had surveys made of the whole country, and British capitalists—and especially those of the Canadas—are filled with the importance of establishing their overland communication, and doing it by railroad; and yet the British government is not in the condition to start the enterprise within their borders that we are to do it within ours. We are in advance of them in the way of communications. We have run steamers both up the Missouri to Fort Benton, and up the Columbia and Snake rivers to the mouth of the Palouse—the distance from point to point being less than five hundred miles on the railroad line. The wagon road in charge of Lieut. Mullan, now in process of construction between these two points, will be completed during the present season. Moreover, the more detailed surveys, and especially the line of spirit levels run by Lieut. Mullan over the Cœur d'Alene or Stevens' Pass, has verified the information previously gained and reported upon by me as to its entire practicability. Our railroads are stretching through Minnesota ; whereas in the Canadas their railroads have only reached Lake Huron and the St. Clair river. They are now connecting these with our roads running through Michigan, Illinois, and Wisconsin. They cannot go north of Lake Superior ; the country has been examined, and has been found to be impracticable. Their only alternative is to make use of our roads until they reach Pembina on the frontier, between the Red river settlement and Minnesota, and then connect them with a system of their own. Will they take this course, if our own government, taking time by the forelock, shall determine to give the necessary aid to a road crossing the 47th parallel, and reaching the waters of the Pacific at Puget sound ? On the contrary, will they not help us ? Will we not have the whole force of the railroad capital and enterprise of the Canadas, backed up by the British government, to assist us in establishing this communication ? Will not this road accommodate British Columbia ? By branches from the great plain of the Columbia, the country can be reached on Thompson's and Frazer's river. Our route is more feasible than theirs ; the distance is shorter, the mountain passes more open, the agricultural value of the country (at least west of the Rocky mountains) very much superior ; and this is known to be the precise feeling, I am credibly informed, of all the great railroad men of the Canadas, to whose enterprise and forecast we owe the Grand Trunk road. They are ready, if our people start the movement, to join hands with us ; and thus this route, so far from being an extreme northern route, is the central route of a vast scope of country having natural outlets both on the Pacific and on the Atlantic, and is the central route of a vast system of railroads having invested in them more than one-half of the railroad capital of this continent. Is it wise—is it just—is it having a proper regard for the future, to ignore this northern route, and to throw into British hands, and to yield to British enterprise the great commercial development of the northwest ?

But let us take a somewhat larger view of the question of national defence than the view already presented. Do we not require, as an element of national defence, that the development of the northwest should be our development—that the rising city of the northwest coast should be in our borders, south of the 49th parallel? Do we not want to hold in our hands the key of the trade of Asia? Is it not our interest to develope the fisheries and the lumber business, the coal, the mines, and the commerce of that northwest? Do we not need the nursery of seamen growing out of such development? Will we not thus get the seeds of a great navy upon that coast? Will we not have the means of building vessels of the largest class, to make that coast self-sustaining in all the means and facilities of a commercial and naval marine? These are the interests involved in the great overland communication by the northern route; and this is, emphatically, a question of the national defence, of commercial superiority, of America having her proper position among the families of the earth. Or, shall we fall back upon the old selfish apothegm, "Posterity will do nothing for us, and therefore we will do nothing for posterity?" I therefore hold it to be the duty of the people of Oregon and Washington to insist that their commercial advantages and position shall be respected by the Congress of the United States, in any system which it may adopt of an overland communication with the Pacific. I do protest against Congress, when we ask for bread, giving us a stone. I protest against the injustice of our being called upon utterly to abandon our great route,—utterly to abandon all idea of the commercial supremacy which our country owes it to itself to establish upon this northwest coast, and to accept instead of this, the boon of a branch communication. It is my deliberate judgment that it will be vastly more difficult for us to establish the branch communication provided for in certain bills, than to establish this great overland communication connecting us directly with the Mississippi river, with the great lakes, and with the vast rail road system of the St. Lawrence basin. What shall be the nature of the branch?

Senator Wigfall's bill proposes a southern and a central route, with a branch to the Columbia river or Puget Sound, from the nearest practicable point on that route. Now it is altogether probable that the central route will go through the Pike's Peak country. The people of Salt Lake and Pike's Peak urge it; the whole population of that portion of the interior, and the people of Nevada will be satisfied with it. Its distance will be two hundred miles shorter than by the South Pass. If there be no engineering difficulties in the way, it must go through Pikes' Peak; and our branch will be a branch, not from the south pass, but via the Sacramento and the Willamette rivers; but in either event it will be purely a local affair. There will be no great interest to assist us. We will have to build it with our own means, and with little or no assistance from others. The whole energies of the people of California will be strained to establish their own communication. But the northern route will be a national route. We will have not merely our own feeble force, but in addition, that of the vast communities of our northern states and of the Canadas, and of the many hundreds of millions of railroad capital there invested. We will have aid from Europe. There will be the strongest influence to push the road through ; and if the object be to get a branch connecting with San Francisco, we will find the key to its solution in the northern route.

ESTIMATE OF COST.

The estimate of cost of road is not given for the distance east from Breckinridge, on the western boundary of Minnesota, to which point the Minnesota and Pacific Railroad Company have located a road under the recent grants of Congress. Their route crosses the Mississippi near the falls of St. Anthony, does not deflect more than 27 miles at any point from an air line, and saves 20 miles in distance over my surveyed routes. Moreover, with means at hand, it can be built for less than my estimate of $25,000 per mile, viz: for about $21,000 or $22,000 per mile.

Estimate of cost of road from Breckenridge to Seattle, via Fort Union, Fort Benton, Cadotte's Pass, Cœur d'Alêne or Stevens' Pass, Cœur d'Alène Mission, north of the Cœur dAléne Lake, and the Snoqualmoo Pass, using the long tunnel. Entire distance, 1,544.51 *miles.*

	Miles.	Per mile.	
Breckenridge to crossing of Milk river	712	$40,000	$28,480,000
Crossing of Milk river to point of departure from Box Elder	30	40,000	1,200,000
Thence to Fort Benton	51½	80,000	4,120,000
Fort Benton to entrance to tunnel.	102.2	70,000	7,154,000
Short tunnel, 5,640 feet, at $120 per foot			316,800
Tunnel, 22,123 feet, at $130 per foot	4.190		2,875,990
Thence to crossing of Hell-Gate	91.86	60,000	5,511,600
Thence to crossing of Bitter Root.	65	50,000	3,250,000
Thence to entrance into tunnel	35	60,000	2,100,000
Tunnel, 1.6 miles, at $130 per foot	1.6		1,098,240
West end of tunnel to Cœur dAlene Mis'n	48½	60,000	2,910,000
Thence to point beyond cross'g of Spokane	70½	60,000	4,230,000
Thence to fork of line to Vancouver	91.25	45,000	4,106,250
Thence to crossing of Columbia.	20	45,000	900,000
Thence to entrance to long tunnel	138.25	50,000	6,912,500
Long tunnel, 11,840 yards, or 6¾ miles, about $140 per ft. or $420 per yard	6.75		5,000,000
Thence to Seattle	75	60,000	4,500,000
Total length in miles	1,543.60		$84,665,380
Steamers on the Missouri and Columbia			1,500,000

Reservoirs, aqueducts, &c		2,000,000
Depots and permanent fixtures		1,750,000
Engineering and contingencies		5,000,000
		$94,915,380
The cost of the short tunnel will be, 4,000 yards, or 2.247 miles, at $390 per yard	$1,560,000	
Add 4½ miles of road and difficult work, at $100,000	450,000	
	$2,010,000	
Total cost of short tunnel		2,990,000
		$91,925,380

Estimate of cost of road from Breckinridge to Vancouver, via Fort Union, Fort Benton, Cadotte's Pass, Cœur d'Aléne or Stevens' Pass, Cœur d'Aléne Mission, north of the Cœur d'Aléne Lake, and the Dalles. Entire distance, 1,526.60 *miles.*

	Miles.	Per mile.	
From Breckinridge to fork of line to Vancouver, as by A	1,303.60	....	$67,352,880
Thence to crossing of Columbia	20	$45,000	900 000
Thence to Dalles	113	60,000	6,780,000
Thence to Vancouver	90	100,000	9,000,000
	1,526.60		$84,032,880
Steamers on the Missouri and Columbia			1,500,000
Reservoirs, aqueducts, &c.			2,000,000
Depots and permanent fixtures			1,750,000
Engineering and contingencies			5,000,000
			$94,282,880

Estimate of cost of branch road from Vancouver to Seattle.

From Vancouver to Seattle, 172 miles, at $50,000 per mile	$8,600,000
Depots	150,000
Total cost of road	$8,750,000

Recapitulation of cost of road from Breckinridge to Seattle, with a branch road to Vancouver, and a branch road from Vancouver to Seattle.

	Miles.	
From Breckinridge to Seattle	1.543.60	$94,915,380
Branch to Vancouver	223.00	16,930,000
Branch from Vancouver to Seattle	172.00	8,750,000
		$120,595,380

In this paper I have preferred not to encumber it with tables showing in detail the advantages as to distance of the northern route over any route in the British possessions, and that by the South Pass, and the greater nearness of its termini both to Asiatic and European ports. These tables are given in my address on the northwest which accompanies this communication, and also tables showing in much detail the significant facts of the several routes, as distances, both lineal and equated, summit levels elevations above the sea, sum of ascents and descents, cost, &c. It will be seen, that the sum of ascents and descents is much the smallest on the northern route.

It must constantly be borne in mind that an enterprise of the magnitude and character of the Pacific railroad, cannot be really taken in hand and the work of construction commenced, except upon the most accurate and minute information. The surveys thus far have been for the most part reconnaissances. It is not certain that on any route the best passes have been ascertained. This fact appears very clearly in the proceedings of the railroad convention at San Francisco as regards the passes of the Sierra Nevada which come into competition on the central route. So on the northern route. The explorations of the mountain regions would have to be extended and comparative reconnaissances made of the several passes to ascertain the most favorable one—which done, the intermediate connections could be established and the work of location commenced. In my judgment, full two years would be required to execute properly this work of reconnaissance and location, and to attain that exact information required to make a detailed estimate of the cost. The engineer must know the cubic yards of excavation in rock and earth, the cubic yards of earth embankment, of masonry of the several kinds, of culverts, bridges, aqueducts, clearing through timber, drainage, the precise localities from which materials can be procured to the best advantage, the cost of delivery of the same, &c., before he is able to arrive at just conclusions as to the probable cost of the road.

In this connexion it may not be improper to observe that the Pacific railroad is being worked out by the agencies now in operation. Local roads are advancing, and diminishing the distance to be overcome. With protection to our citizens from Indian disturbances, with opening communications, and the overland mail, every day is rapidly preparing facilities to undertake, and the business to render remunerative, the Pacific railroad. If two years could now be devoted to a thorough examination of the several routes to locate roads, and ascertain the actual cost, it would afford Congress and the people of the country information on which intelligent action could be had.

In conclusion, I will express the hope that the convention may be well attended, and that its proceedings may show that the people of Oregon and Washington are not unmindful of their true interests and the exigencies of the country, in their consideration of the greatest practical enterprise of the age, the Pacific Railroad.

Very respectfully,
ISAAC I. STEVENS.

(An anecdote of Gen Stevens)
In the winter of 1857 I was
in Washington on business relating
to [illegible] the Land Grant RR in
which of which I was Chief Engin
One morning I was in Gen Stevens [illegible]
Room (he was then a delegate in Congress for
Washington Territory). There were a number
of members of Congress present. Stevens was
talking up the merits of the North Pacific
[illegible]
Said one of the gentlemen (I think [illegible])
[illegible] Stevens [illegible]
he did not [illegible]
[illegible] going [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

A CIRCULAR LETTER

TO

EMIGRANTS DESIROUS OF LOCATING

IN

Washington Territory,

Gen

By **ISAAC I. STEVENS, Delegate in Congress.**

Killed in Popes Campaign
Sept 1st 1862
school mate &
life long friend
GTC

a native of Andover. (now known as
North Andover) Massachusetts.

WASHINGTON:
GEORGE S. GIDEON, PRINTER.
1858.

CIRCULAR LETTER.

Having received many letters of inquiry in regard to Washington Territory, and the best route of emigration thither, I have concluded to publish this circular letter for the information of persons who are desirous of locating in that section of our country. As regards the resources of the Territory, its climate, soil, and present condition, the circular letter of his Excellency Fayette McMullin, the present Governor of Washington, is so just, comprehensive, and complete, that but little is left for me to do except to republish his letter, with the statement that I am able to endorse his views from a personal knowledge of that Territory, acquired during a residence of more than four years, and after a careful personal observation of nearly all parts of it, and to furnish some notes in regard to routes for the use of emigrants. I will also, in connection with this paper, republish a memorial of the citizens of the Territory, setting forth the advantages and character of the country on, and adjacent to, Gray's Harbor and the Chehalis river.

I will also refer the public to a recent work by James G. Swan, esq., entitled "The Northwest Coast, or Three Years in Washington Territory," which gives an accurate and graphic account of the country and its resources, and is a work to be entirely relied upon.

Finally, I will refer the public to my report of the exploration of the northern route for a Pacific railroad, wherein my views, and those of the several gentlemen in charge of exploring parties, are given at much length of the country from the Upper Mississippi to the Pacific coast. A general description of the Territory of Washington will be found in that report. Of some portions the description is very minute.

The proper route of emigration westward becomes of great importance in consequence of the troubles in Utah. There is a good wagon road from the western frontier, via the South Pass, to Fort Hall, and thence down the Columbia valley. At old Fort Walla Walla emigrants will cross the Columbia river and take the road on the Nachess Pass of the Cascades to Puget sound.

The route from the vicinity of the South Pass, westward and northward to Snake river, has been much improved, in consequence of the explorations of F. W. Lander, esq., the past season, and guides can, without doubt, be found who are familiar with the country.

Should the Utah troubles break up this route, then emigrants leaving the usual trail near Fort Laramie, and skirting the eastern base of the Wind River mountains in the direction of the Upper Yellow Stone, will find a well watered and well grassed country all the way to the tributaries of the Missouri; and crossing the Rocky mountains by a pass leading from the Wisdom tributary of the Missouri to the Hell Gate river, follow this river down to its connection with a route north of the Missouri from Lake Superior and the Upper Mississippi.

The country for some 175 miles north of Laramie, and to the eastward, has been explored the past season by Lieut. Warren, and the character of the whole country, from the line of his explorations to those of the parties of the exploration of the Northern Pacific Railroad route, especially of Lieut. Mullan on the Wisdom and other tributaries of the Missouri, and in the Flathead country, is well known from the many trappers and mountain men who have frequented that region, as also from the Indians.

Emigrants from the Upper Mississippi or from the great lakes will find an excellent natural wagon road, with grass and water all the way to Fort Benton, near the great falls of the Missouri. The country is well known, to the Bois de Sioux, in Minnesota; thence to Fort Union, at the mouth of the Yellow Stone, no trouble will be found in getting guides. The distance from St. Paul's to Fort Union is 715 miles. There will be some four or five camps, where the bois de vache will be the only fuel. From Fort Union to Fort Benton is 377 miles; the route is travelled with wagons many times each year by the fur companies. There is water, wood, and grass all the way from Fort Benton to Hell Gate; the route is by the northern Little Blackfoot or "Mullan's" trail, over which wagons were taken in March, 1854, and in 1856—the distance is about 240 miles. The Little Blackfoot empties into the Hell Gate, 55 miles, before reaching the debouche of the Hell Gate river, in the Bitter Root valley, and at that point connects with the route already referred to, leading from the Wisdom, over the Rocky Mountain divide, to the Hell Gate river. Thence, the route will be down the Bitter Root river to the mouth of the St. Regis de Borgia creek; thence, up that creek, to the crossing of the Coeur d'Aléne mountains; thence, down the Coeur d'Aléne river, to the Coeur d'Aléne mission; thence, either by the crossing of the Spokane at Antoine Plante's, or the guts of the Coeur d'Aléne lake, the emigrant can reach the Walla Walla valley.

Heavily laden wagons were taken by me from the Dalles, via the Walla Walla valley, in 1855, to the Spokane, at Antoine Plante's.

On this route the emigrant would have to do some work, from a point about 30 miles below Hell Gate to a point about 30 miles above Antoine Plante's, a distance of 150 miles; or, if he took the route of the guts of the Coeur d'Aléne lake, there would be work from the point on the Bitter Root, 30 miles below Hell Gate, to 10 miles beyond the guts of the Coeur d'Aléne—in either case about 150 miles. Ten wagons, with a few extra hands and a few tools, could open the trail in thirty days. The whole distance from Fort Benton to old Fort Walla Walla would be, in round numbers, about five hundred miles.

From Antoine Plante's there are good routes both for wagons and packs to Colville, the headquarters of the gold region; the distance being in round numbers about ninety miles.

The distance from St. Paul's, or the western end of Lake Superior, to old Fort Walla Walla would be about 1,600 miles, and thence to the Sound about 1,840 miles. By crossing the Columbia river, a little above the mouth of the Snake, where there is a good crossing, the distance would be about 1,800 miles; there is wood, water, and grass in abundance the whole distance. The only precaution is, that emigrants moving in large bodies, in passing up the Regis de Borgia, and thence down the Coeur d'Aléne, should not camp altogether, but for some days move in several camps.

The distance from Fort Leavenworth to Puget sound via the South Pass and Snake river would be about 2,100 miles. From Fort Leavenworth via the route north of Laramie, and thence to the Wisdom and Hell Gate rivers to Puget sound, about 1,950 miles.

Emigrants moving in bodies, using the necessary precautions, and treating the Indians with justice and kindness, would not be molested by them till after crossing the Coeur d'Aléne mountains and arriving upon the great Columbia plains, where the military force now in the Walla Walla valley would afford protection to them.

The best time to start from the Upper Mississippi would be about the middle of May. The crossing of the Cascades should not be made later than October.

Emigrants moving north of the Missouri could have provisions and effects sent up the Missouri by steamers to Fort Union, and thence by keel-boats to Fort Benton. This is the plan adopted by the fur companies, who, however, generally run their steamers above Fort Union, sometimes as high as the mouth of Milk river, and then transfer the goods to the keel-boats.

As the Missouri is navigable for light-draught steamers to Fort Benton for seven months of the year (at all seasons except when obstructed by ice,) and as the Columbia is navigable to Priest's Rapids, above the mouth of Snake river, and probably the Snake is navigable to the mouth of the Palouse, a point of the route from the Coeur d'Aléne to Fort Walla Walla, the importance of the northern route as a line of emigration is obvious; for the distance between the navigable waters of the two rivers does not exceed five hundred miles, and probably not four hundred and fifty miles.

In addition to the statements made by Gov. McMullin, I will say that east of the Cascade mountains good land is found in large bodies, as in the re-entering of Snake river, including the valleys of the Walla Walla river and its tributaries, a farming and grazing region, sufficient for a population of one hundred thousand souls; west of the Coeur d'Aléne and Bitter Root mountains, where, for a breadth of one hundred miles, the soil is not only good but equal to the western prairies; and in the southern part of the Yackama country. On the Spokane, and in the region towards Colville, there is much good land and excellent locations for farms. The Flathead country is one-third arable, and at least equal to the Alleghany region in Pennsylvania and Virginia. In these valleys are delighful resting places for emigrants and stock. The grasses are good all through the winter, with but a small number of days of cold weather.

Persons wishing to emigrate to Washington Territory from the Eastern States for the purposes of lumbering, fishing, or trading, will find the easiest mode of conveyance to be by water, either by the present lines of steamers semi-monthly from New York to San Francisco, and from thence by sailing vessels or steamers to Puget sound, or the Columbia river; or they can take the cheaper method of a sailing vessel via Cape Horn. A company of emigrants could either charter or buy a suitable vessel, and after arriving at their destination readily sell or load her on their own account with coal or timber.

The whale, cod, and salmon fisheries of Washington Territory offer great inducement to that class of our citizens engaged in those pursuits; and the proximity of the coal mines and forests of timber to navigable waters offer peculiar advantages to those persons engaged in commercial business.

The mouth of the Columbia river, Shoalwater bay, Gray's harbor, as well as Neah bay, near the entrance of the Straits de Fuca, as well as the other ports of the Straits and Sound, afford good locations for the above class of emigrants. The land of the coast is very good, though heavily timbered; and in the vicinity of Gray's harbor and Shoalwater bay there is an extensive country having most abundant and nutritious grasses summer and winter.

Lumbering operations are also carried on on the Columbia river, as at Cathlamet, Oak Point, Washuyal, Cascades, and other places; and the Columbia bottom, from its mouth to the Cascades, has an exceedingly fertile soil, though a portion, from the annual overflow in June, is better adapted to grazing than to crops. There are several valleys and bottoms of rivers flowing into this portion of the Columbia, offering great inducements to settlers—as the Cowlitz river.

Emigrants desirous of locating in the Columbia valley can, at the Dalles, take steamers and land at any point on the river; and it is expected that steamers will run the present season on the Upper Columbia from the mouth of the Des Chutes, some eleven miles above the Dalles, to Fort Walla Walla. Sailing vessels have been running on this portion of the river the last year. As vessels have little or no freight returning, emigrants could send their effects down the river if they should find it difficult to haul them in consequence of a loss of cattle, or the cattle becoming thin and weak from the long journey.

Emigrants should, however, in this connexion, bear in mind the two portages at the Dalles, (eleven miles,) and the Cascades, ($2\frac{1}{2}$ to 5 miles, according to the stage of water.)

ISAAC I. STEVENS,
Delegate in Congress from Washington Territory.

WASHINGTON CITY, *February* 1, 1858.

LETTER OF GOVERNOR McMULLIN,

OF WASHINGTON TERRITORY.

Territory of Washington,
Olympia, November 17th, 1857.

Editors Pioneer and Democrat:

Gentlemen: Before leaving the Atlantic States, to assume the duties of executive of this remote Territory, many friends and acquaintances residing in various portions of the Union desired that after my arrival here I would write them, giving my views relative to the country. To write to each one would involve much time and no little trouble. I have therefore thought it the better plan to give, through the columns of your valuable journal, such facts as I have become personally cognizant of, in connection with those given me by many gentlemen of intelligence and long residence in the country, for the benefit of all those who are strangers to this Territory, the many advantages offered the immigrant, and the great importance to our government of so valuable a possession on the northwest coast.

Congress, in the act of organization, fixed the following general boundary:

North by the 49th parallel of north latidude; east by the summit of the Rocky mountains; south by the 46th degree of north latidude and the main channel of the Columbia river; and west by the Pacific Ocean.

The Cascade mountains have a general north and south direction; are parallel with, and at an average distance of some one hundred miles from the sea-coast.

The principal settlements are west of this range of mountains, and stretching from the southern to the northern boundary of the Territory, comprising an area of about 17,000 square miles, and containing, say, 11,000,000 acres of land, a greater portion of which for fertility will compare favorably with most of the Atlantic States, both for grazing and tillage, and whose products begin to vie with any portion of country in the temperate zone.

The prevailing feature of this portion of the Territory is its dense forests of majestic firs and cedars, interspersed with valleys and prairies, settling with an intelligent and industrious people.

The Climate.—Since my arrival here, on the 9th of September, the weather has been most delightful, with the exception of some few days of rain, indicating the approach of the rainy season. My information from the old residents of the country is, that throughout the winter months, stock subsist almost entirely by grazing. Working cattle, of course, require feeding. When the rains begin to fall the grass springs anew, thus affording a good winter range.

I have reliable authority for stating that so exceedingly mild is the climate, that the farmer is seldom prevented, on account of frost, from ploughing his ground and sowing winter grain as late as the middle of December. Much of the winter wheat is sown in the first two weeks of February, and the sowing of spring grain is usually commenced in this month and continued until May.

The following summary of meteorological observations, taken at Fort Steilacoom during a period of four years, it is thought, will be sufficient to show the usual winter temperature west of the Cascade mountains:

Mean temperature at Fort Steilacoom for a period of four years.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1850.	35.7	39.4	41.2	47.7	56.3	60.6	64.8	62.9	55.5	51.9	41.9	37.4
1851.	40.6	40.8	43.2	51.5	54.4	61.2	63.9	66.3	57.0	52.9	47.0	41.1
1852.	44.1	43.7	40.9	46.5	58.2	62.1	64.4	64.6	56.6	51.9	48.9	32.2
1853.	39.7	39.8	41.9	48.7	57.6	60.4	66.5	62.1	58.5	53.6	45.2	44.6
Mean	38.1	40.7	41.8	48.6	56.6	61.1	64.9	64.0	56.9	52.6	46.2	38.3

Mean temperature at Fort Steilacoom for the last three and the first three months of 1853 *and '54, giving also the amount of rain and snow, and the number of frosts in each month.*

Date.	MEAN TEMPERATURE.				
	Sunrise.	9 a. m.	3. p. m.	9 p. m.	Monthly Mean.
1853.	°	°	°	°	°
*October	45.25	55.58	62.32	51.19	53.32
†November	40.2	46.7	50.43	43.73	44.63
‡December	38.74	44.30	51.	44.45	44.74
1854.					
§January	24.64	29.96	37.80	30.03	31.38
‖February	34.17	39.82	48.17	36.42	43.
¶March	35.58	43.58	54.22	40.09	46.08

REMARKS.

*There were 6.93 inches of rain. There was hoar frost three times, and frost once during the month.

†There were 18.41 inches of rain. Hoar frost twice; one strong frost.

‡There were 4.42 inches of rain. 1½ inch of snow at sunrise on the 23d. There was hoar frost three times, frost once, and hard frost four times during the month.

§There were 8.69 inches of rain. 2½ inches of snow at sunrise, and ice 1½ inch thick on the 4th. Snow latter part of the 10th; 2¾ inches of snow at sunrise, and snow at intervals on the 11th. Light showers of snow at intervals on the 12th. Six days when there was no frost.

‖There were 7.57 inches of rain. One-eighth of inch of snow at sunrise on the 1st; snow at intervals on the 10th. One-quarter inch of snow at sunrise, and snow at intervals on the 11th. Snow on the 14th. Hard frost four times; hoar frost twice.

¶There were 2.89 inches of rain. Light showers of snow at intervals on the 10th; showers of hail and snow on the 29th. Two hoar frosts and one hard frost during the month.

Health of the Country.—It seems to be a conceded fact, that this northwest coast is the most healthy portion of the North American continent. It is said by those who have resided here for years, that most of the deaths occurring amongst the white settlers in the Puget Sound country, since its settlement by Americans, have been the result of accident, or from diseases contracted before coming to the country; such as consumption, chronic affections, &c.

Agriculture.—Western Washington is, on the whole, well adapted to agriculture; nearly one-third being prairie, much of which is excellent land for tillage, as well as grazing. The soil of the timbered districts is mostly good, either clay or sand loam, and the lands along the rivers and bayous very productive. Farming can be made profitable here when the price of labor is reduced by immigration. Labor is very high, and farmers say it will not do to pay for farm hands.

What is most needed here now is more people to develop the resources of the country. Farmers, mechanics, lumbermen, and fishermen will find an ample field for their enterprise. This is one of the portions of the world where labor has a decided advantage over capital and intellect. Wages rule high, the common laborer receiving $2 50 to $3 per day, and female labor, when it can be had, commanding from $30 to $40 per month. The price of washing is $2 to $3 per dozen.

The entire white population of the Territory does not exceed 7,000, while the various Indian tribes number upwards of 20,000 souls.

I find the people here very kind and hospitable, and quite as intelligent and moral as in the States. One very commendable trait in the character of our citizens in this Territory, is the great interest manifested in the cause of education.

The large amount of money expended for teachers' salaries and the general support of schools, as well as for the erection of substantial and comfortable school-houses throughout the country, indicate a wholesome feeling on the part of the public in favor of general education. Among directors there seems to be a prevailing disposition to obtain the most competent instructors, and to see to it, that a corresponding recompense is paid them for their valuable services.

From what I have seen and heard, I am forced to the conclusion that no disbursement of money is made by the citizens of this Territory with more cheerfulness or greater willingness than that contributed for schools and the support of competent teachers.

At Olympia, the seat of government, is located the "*Puget Sound Wesleyan Institute*," having some sixty students. All the elementary and higher branches, and music, are taught in this institution. I have visited this school and found many classes pursuing their various studies with marked success, reflecting credit not only upon themselves, but upon the teachers who instruct them.

I have visited, also, the public school of Olympia, and find it admirably conducted. It is under the charge of an accomplished and competent lady-teacher, recently from one of the public schools of the city of Syracuse, New York, where female teachers are paid $250 per annum for their arduous duties. This lady's services were secured immediately on her arrival here at a salary of $1,000 per annum; talent and energy being properly appreciated in this remote Territory.

Vocal music, so conducive to physical, mental and moral development, is taught in this school, not only as a healthful, but as a scientific exercise.

PRODUCTIONS OF THE COUNTRY.—*Stock*, which, owing to the mildness of the climate, require so little care from year to year, must be a source of great profit. In this business one important fact is, that heifers come in at twenty to twenty-four months old, and ewes have lambs twice a year. Present prices: Beef cattle from the range on foot, $8 per cwt.; oxen, per yoke, $150 to $200; cows, $40 to $75; sheep for the market, $12 50 per cwt.

Swine, running on the range, keep in good condition by feeding on fern roots and the *camus*. Put into the pen they are fattened on peas and potatoes. Present market price: Fresh pork $8 per cwt.; bacon—sides and shoulders $16 to $20 per cwt.; hams 25c. per lb.

PRODUCTS OF THE FARM, are those common to the Northern and Middle States—Indian corn excepted, which is only cultivated for table use; the nights, during the summer, being too cool for successful field cultivation.

Grains—comprising wheat, oats, barley, rye, buckwheat and peas—yield abundantly, and are of very superior quality. The pure dry atmosphere of the summer months is a great protection to grain crops against rust, which rarely if ever affects them.

Very little grain is offered in the market except wheat and oats. The former is now worth $1 50, and the latter 60c. to 75c., per bushel.

FRUIT.—The soil and climate here seem to be peculiary adapted to the growing of fruit, and much attention is now being given to its cultivation, not only by our farmers, but by professional gentlemen, stimulated, no doubt, by the high price the article commands in our own as well as the California market. The rapid growth of fruit trees is extraordinary, and the early age at which they bear surpasses anything I have known. A farmer from a neighboring county brought to this market some fifty bushels of apples, taken from an orchard of one hundred trees, four years of age. In a nursery, near this place, several trees, two years of age, have borne several apples each the past season.

With such results—owing, doubtless, to the mildness of climate during the winter season—the raising of fruit in this Territory must prove exceedingly profitable.

The largest apple I have ever seen is a specimen of the golden pippin, presented me by one of our fruit-growers, measuring fifteen inches in circumference, and weighing twenty-six and a half ounces.

The price obtained for apples this fall has been from $6 to $8 per bushel, retailing at the shops for six bits to one dollar per dozen.

WILD BERRIES.—From May to December, the markets are abundantly supplied with this delicious fruit; several varieties of which are unknown east of the Rocky mountains.

VEGETABLES, common to the Western, Middle and New England States, are produced in the greatest profusion, when attention is given to their cultivation, and are of as fine a quality as I have seen anywhere on the Atlantic slope. The Irish potato is particularly fine, and will yield on our best lands from 300 to 500 bushels to the acre. Present price, $1; onions, $2; turnips, $1; beets, $1 50.

BUTTER AND CHEESE are made in considerable quantities. The former is selling at 50c. to 75c. per lb., and cheese at 37c.

POULTRY.—Every farm seems well supplied with domestic fowls. Chickens sell at 50c., and turkeys at $2 each; eggs 50c. per dozen.

WILD FOWLS are in great variety, and during the fall and winter months the waters of the bays, bayous and inlets litterly swarm with them.

GAME.—Deer, bear, panthers, wild cats, cougars, &c., can be found in great numbers in the forests.

SHELL FISH.—Clams, oysters, and other shell-fish are abundant.

FISH.—It is presumed that the same varieties exist in our Pacific waters that are found on the Atlantic coast. Very few are caught, except by the Indians, who take salmon, cod, halibut, sturgeon, trout, bass, &c. Salmon and trout abound in all the waters of the Territory, and of very superior quality. This fish is the Indian's chief article of subsistence.

I am informed that captains sailing out of Puget sound frequently see Indians many miles at sea, in their large canoes, catching codfish; and it is believed that as fine banks for taking this fish are off this coast as can be found on the Atlantic seaboard.

Large numbers of humpback and finback whales are taken by the Indians for the oil, which they dispose of to vessels trading on the coast of Washington. My attention has been called to statistical facts, going to show that thousands of gallons of this oil are sold by the Indians of Cape Flattery and Vancouver's island annually.

It is a well-known fact, that on this northwest coast are the most important and best whaling-grounds in the world; and when it is known that the species of whale above mentioned abound along the coast and even enter the Straits of Fuca in numbers, it is believed that men of very limited means might engage in the business to very great advantage. Statistics show that in 1852, during a period of five months, upwards of 36,000 gallons of oil (about 1,100 barrels) were sold in San Francisco, all of which was purchased off Cape Flattery and Vancouver's island; it is stated, too, that the annual sales since that time have been in a corresponding ratio. The Straits of San Juan de Fuca, Admiralty inlet, and Puget sound form the most magnificent harbors on the continent, and probably in the world.

From Cape Flattery, at the mouth of the straits, to Olympia, at the head of Puget sound, is about 210 miles.

These inland seas are the great thoroughfare of the central and northern portion of the Territory lying west of the Cascade mountains. They are not confined to one great main channel, but are interspersed with many large and beautiful islands, forming many channels, and having in the aggregate a shore-line of sixteen hundred miles, giving access to a fine agricultural region, comprising an area of some ten thousand square miles. These waters are entirely free from hidden rocks and reefs, calculated to endanger navigation, and are deep enough for the largest ships to ride at anchor.

Upon the banks of the Sound, and easy of access for shipping, are immense forests of the largest and finest timber in the world, comprised mostly of cedar and fir, the latter often reaching a height of three hundred feet, and admirably adapted for piles, masts and spars. Large quantities of masts, spars and piles are prepared at various points on the Sound and are shipped to the California and South American markets, to France, China, and the islands of the Pacific.

The manufacture of lumber is carried on extensively. Between Port Gamble and the head of the sound—a distance of 120 miles—are located, at different points, some twenty saw-mills, each turning out from seven to thirty thousand feet of lumber every twenty-four hours. Seven of these mills are driven by steam power, and have, in connection with their gangs of saws, planing, shingle and lathing mills. The steam-mill of Pope & Co., at Port Gamble, when driven to the extent of its capacity, turns out thirty thousand feet of lumber daily, besides the laths and shingles made, and the work performed by the planing machine. From one hundred and sixty to one hundred and eighty men are kept constantly employed by this mill as loggers and sawyers.

This same company, I am told, have recently erected another large steam-mill at Cebec, on Hood's canal.

The steam and water mills at Olympia, Steilacoom, Seattle, Port Orchard, Port Madison, Port Ludlow, and other points, I am told are doing a fair business.

The Schutes river, one and a half miles above Olympia, and the head of the southernmost inlet of the sound, affords abundant and most excellent water-power. The volume of water is large, and for the last half mile its course is between high banks and over a succession of rapids, with an aggregate descent some seventy-five feet, when it makes a final precipitate plunge of some 15 or 20 feet into tide-water. At this point have been erected some very fine saw and grist mills.

The numerous mountain rivulets afford excellent mill-sites, and the land bordering these streams is fertile and productive, and have been found, beyond a doubt, to be well suited to most branches of agriculture.

Inexhaustible beds of coal have been opened at different points convenient for shipping. At Bellingham Bay the mines are now being worked with energy, and a superior coal is raised. Recent trials of this article by steamships on the Sound, show excellent results.

There are also large quantities of building and lime-stone, both on the islands and on the main shore.

Recent intelligence from the gold mines east of the Cascades, on various tributaries of the Columbia, in the vicinity of Fort Colville and elsewhere, goes to show that these diggings are paying well. Few of our citizens have ventured there as yet, owing to the Indian difficulties, but those who have are reported as making from $6 to $16 per day. Should the differences between our government and the various Indian tribes east of the Cascades ever be arranged in such a manner as to make it safe for our people to travel there, in order to fairly prospect the gold region, it is believed these mines will pay as well as those of California. They are of easy access from Puget sound, to which point the mail steamer makes regular trips from San Francisco.

The great importance of Puget sound, in a commercial point of view, I cannot better give to the public than by quoting the general remarks made by Governor Stevens, in his able report of the exploration and survey of the Northern Pacific Railroad:

Resources and Geographical Importance of Puget Sound, and its Relations to the Trade of Asia.

"The principal resources of the Sound are its lumber, its coal, its salmon, and the cod on the banks of the coast, far to the north and south of the entrance to the Straits. The coal-beds extend from Bellingham bay to the Cowlitz river, and when subjected to analysis have been pronounced of excellent quality. Such was the opinion of the late Professor Walter Johnson; and Lieut. Trowbridge, corps of engineers, has, after examination, expressed a favorable opinion of its quality.

"There is also much good land between the Cascades and the ocean. Although, at some points, spurs from the mountains extend nearly to the Sound, yet generally there is an interval of prairie or rolling land some thirty or forty miles broad; the river bottoms generally rich, with an undergrowth of vine, maple and alder. In the vicinity of, and north of Bellingham bay, there are extensive prairies, and the river Nook-Sack, navigable for steamers at least sixty miles, and which, having its source back of Mount Baker, passes under its southern and western base, and finally enters the Sound in the northern part of the bay, is represented to have much excellent land on its banks. At the delta of the Sam-ish and Sin-a-ah-mish, and on the D'Wamish, and its several tributaries on the Puyallup, there is much excellent land. The prairies on the northern shore of the same are some of them gravelly, particularly those in the vicinity of Nisqually; but, as a general rule, the land is good, and yields fair returns to labor. The quality of the land improves on approaching the mountain slopes, and extensive prairies near the head of the Cowlitz, and at the base of Mount St. Helens, is one of the best tracts of land in the Territory.

"The region generally between the Columbia river and the Sound, and the Cascades and the Pacific ocean, is well watered. The river bottoms, having a growth of fir, maple, alder and curl maple, are generally rich, and there is much productive prairie, interspersed with groves of timber, and little or none of the country can be called mountainous.

"West of the Sound the country is reported to have great mineral wealth and much excellent land. There will be a great thoroughfare of business and travel from the Sound to the Columbia river, and the interests of the two Territories of Oregon and Washington will soon require a railroad."

[Referring to the importance of a railroad from the Pacific to the Atlantic, Gov. Stevens continues:]

"A question of the highest importance in connection with the proposed railroad, is the effect which it will have in securing for this country the control of the Asiatic trade. The magnitude of the subject, the want of reliable statistics, and the difficulty in reasoning from the past when political revolutions, mechanical inventions, and new routes of travel are producing such great changes in the relations of commerce, will preclude me from considering the subject in detail. A few general considerations will be sufficient to show the importance of the proposed road as an avenue for the trade of Asia.

"The position of this country, standing midway between the great centres of Asiatic and European population, indicates its future commercial greatness. Facing our Pacific possessions, and separated from them by the smooth Pacific, is a vast region covering an area of over twelve millions of square miles, and having a population of over six hundred millions, the outlets of whose commerce and productions are nearer, not only to our Pacific but our Atlantic cities, than to the ports of any European nation; Calcutta, Singapore, Manilla, Canton, and Shanghai being nearer to New York, New Orleans and Charleston, by lines of communication entirely feasible, than to England.

"The trade of this vast region, including China, Japan, and the Asiatic Archipelago, has been the great commercial prize in ancient and modern times. Persia, Assyria, Carthage, and Rome, each swayed the world, as it controlled the commerce of the East. Venice, Genoa, Lisbon, Amsterdam, and London, each in its turn attained commercial supremacy as it became the disposer of eastern luxuries to the western world. The value of the import and export trade of the Asiatic region, which can be made tributary to our commerce, connot be readily determined; but that of China has been estimated at one hundred and twenty-five millions of dollars per annum, the greater part of which has been carried on by Great Britain; and the annual value of the import and export trade of Great Britain with the Asiatic Archipelago and Pacific islands is estimated at seventy-five millions of dollars.

"An important fact bearing upon the feasibility of diverting the trade of Asia from the old channels, is the comparative nearness of our Pacific possessions to the city of Shanghai, which is most favorably situated to become the future emporium of China, and the outlet of trade of over three hundred millions of people, who are just beginning to break away from that exclusive policy which has for so many centuries shut them out from the rest of the world. The concentration of British capital at Canton, and its greater nearness to England, has made the latter city the centre of the foreign trade with China. But the silk and tea producing districts lie much nearer to Shanghai, while this city, situated upon a river which is connected with the Yangtze Kiang, the great artery of China, has water communication with one third of the empire. Shanghai, which may be called the New Orleans of China, is distant only 5,000 miles from Puget sound, and the route passes by Japan, with its fifty millions of inhabitants—Jeddo being only 3,660 miles distant from Puget sound.

"Nature has clearly indicated the northern pathway for the commerce from the future mart of Asiatic trade to this country and Europe. The great lakes carry us water-borne half-way across the continent. The proposed road communicates on a direct line with the northern lake trade—the most wonderful internal commerce the world has ever known—a traffic which is stated to have amounted in 1851 to $326,000,000, employing 74,000 tons of steam, and 138,000 tons of sail vessels. It intersects the Mississippi river and thus communicates with the Southern States. It is on the line of the great wheat-producing region of America; and, above all, it is on the direct line of the shortest distance between the centres of European and Asiatic population.

"The opening of this avenue is already eagerly sought by our own people to facilitate the exchange of their products with those of Asia. From New York to Shanghai, by way of Cape Horn and Lima, the sailing distance is 21,000 miles. By way of the Cape of Good Hope the distance is about 15,000 miles. From New York to Shanghai, by way of the proposed railroad and Puget sound, the distance will be 7,800 to 8,000 miles—a saving over the sailing routes either of Cape Horn or the Cape of Good Hope, which must carry a great part of the Asiatic trade with our Atlantic cities across the continent. But the Atlantic cities cannot be considered the true points of departure for the Asiatic trade. There must be points in the great interior between the Rocky mountains and Alleghanies. From St. Paul, on the Mississippi river, to Shanghai, the distance will be less than 7,000 miles, and the inhabitants of the great interior, where the mass of our population will hereafter be situated, in their consumption of Asiatic teas, silks and spices, will save the transportation from the seaboard.

"In predicting the future course of Asiatic trade, it is presumed that lines of steamships will be established between Shanghai and our Pacific possessions. The coal of Puget sound, lying on the route from San Francisco to Shanghai, will furnish the necessary combustible. It is also presumed that the difficulty of carrying freight, together with the coal requisite for so long a voyage, will be greatly overcome by the increased size of vessels—steamships of even 10,000 tons burden being now in the course of construction; and also by mechanical inventions and improvements in motive power, which will diminish the quantity of fuel required. It may be safely assumed that, by the time the proposed road is completed, the average time on the Pacific, so much more favorable for steam voyages than the Atlantic, will exceed fifteen miles per hour.

"When an uninterrupted line of steam communication is established a portion of the European trade, and nearly all the travel to Asia, must take its course across our continent, and on the northern road as the shortest route. The present sailing distance from Liverpool to Shanghai is 14,400 miles. By way of Puget sound the distance will be 10,800 miles, a difference equal to a voyage across the Atlantic. From England to Jeddo, in Japan, the sailing distance is 15,660 miles. By way of Puget sound the distance will be 9,500 miles.

"The course of travel is determined by the shortest time. The saving of time will carry European travel and mails, even as far as Calcutta, and much more to places farther east and nearer our Pacific possessions, by the proposed route. The average time required to carry the mails from Calcutta to England, on the overland route, is forty-eight days; from Shanghai to England, sixty days. The distance from Calcutta to Puget sound is 8,450 miles, which distance would be performed by steam vessels, at fifteen miles an hour, in twenty-three days; the 2,800 miles from Puget sound to New York will be run over by passenger trains, moving at thirty miles an hour, in four days; from New York to England, the average time is twelve days: making in all, thirty-nine days, and a saving in time of nine days from England to Calcutta, and of thirty-three days in the time from New York to Calcutta by the way of England. The travel from Shanghai to New York would be performed in eighteen days; from Shanghai to England in thirty days; being a saving of fifty-four days from New York and thirty days from England.

"It may be more doubtful if merchandise will bear the heavy expense of transportation by rail and steam vessels. It would be hardly safe at present to fix the limits of economical transportation of merchandise, as other elements than mere cost are to be considered. The saving of time is an important element, as is evinced by the high freights paid to clipper-ships, and the higher rates paid for transportation by rail on lines parallel to canals and rivers.

"Notwithstanding an increased cost of transportation, all merchandise which is deteriorated by exposure to a tropical climate will take the northern route across the continent. The British sailing-route and our own cross the equator twice. Teas, as well as other animal and vegetable substances designed for human sustenance, are heated and greatly injured by exposure to a continued high temperature. It is believed that the delicate flavor of tea, transported overland from China to St. Petersburg, will be preserved in that article transported by sea, when the present tropical exposure is avoided.

"A short route to China is of the utmost importance to this country to facilitate the exportation of goods manufactured from the great American staple. Great Britain has penetrated Asia, and commanded its valuable trade almost wholly by her exports of cotton goods. Hitherto we have had no advantage of distance in our competition for this trade. Her advantages for manufacturing are fast diminishing. The prices of labor in that country are increasing. Our own manufacturers of coarse cottons have attained such skill and economy that they command our own markets, and are only restrained in the productions of their enterprise by a want of outlets for their fabrics. Hundreds of millions of people in China and the Asiatic Archipelago are to be supplied with cotton clothing; and the great superiority of the American staple over the India cotton will always create a demand for our fabrics. The English and American manufacturers take their raw material from the same starting point—New Orleans. The former has to transport this material 4,500 miles, to Liverpool, to be manufactured, and the products of the manufacture 14,400 miles, to Shanghai—making, in all, a distance of 18,900 miles. When the proposed railroad is completed, he will have to transport his cotton from the common starting point only 9,800 miles to the common market, Shanghai. The American will have in his favor 8,600 miles, and a still greater advantage when manufactures are established at the south. There can be no reasonable doubt that, with the advantages of the rapidity of transit and shortness of distance, all our cotton fabrics of a value exceeding —— dollars per ton will be transported by rail to Puget sound. It has been estimated that the supply necessary for these new markets will require an amount of cotton equal to the present 'entire' crop of upland cotton of the United States. When it is remembered that the United States manufactures only one-third of the entire crop, the rest being exported, and that the capital invested in our own cotton manufactures is $80,000,000, and the annual value of the products of these manufactories is $70,000,000, some conception may be formed of the value of an avenue to Asiatic trade which opens a new outlet to these products."

It would seem that a special Providence has placed this magnificent inland sea of harbors precisely where it *is* placed, for the specific purpose of a national depot for the shipping of the world, and the western terminus of one of the great highways for all nations across the American continent.

From what I have seen of this most important of all the Territories of the Union—from the most reliable information I can get of the great interior portion of it, lying between the Cascade and the Rocky mountains—the great mildness of its climate—its arable and its grazing lands, stretching even to its eastern boundary, which divides it from the plains of Nebraska and Minnesota, I am forced to the conclusion and belief that the northern route possesses as many if not more natural advantages for a railroad than any other across the continent—taking into consideration the navigability of the Missouri and Columbia rivers, whereby material for its construction can be transported far into the interior, both from the Pacific side and the Atlantic slope.

It would seem that this route is nearly on a line with the head of Lake Superior, the most western of that great chain of lakes which, it has been said, " carry us water-borne half way across the continent," thus striking the great thoroughfare of northern emigration, and passing over the prairie region reaching from the Mississippi to the Rocky mountains, through the timbered districts of Minnesota, and accessible to the vast pine regions of the Red river of the north, approaches the summit of the Rocky mountains by easy grades of sixty feet to the mile (as per Governor STEVENS's report), and crosses the dividing ridge by a tunnel of 2¼ miles. Of this divide and the country adjacent thereto, Lieut. SEXTON (an officer of the expedition) says: "The ridge which divides the waters flowing into the Atlantic from those flowing into the Pacific, at the place where we crossed, is but a high hill, and it is not more than a mile in a straight line between the sources of the Columbia and Missouri. Nature seems to have intended it as one of the great highways across the continent. * * * A magnificent country, fitted to support a numerous population of civilized men. * * * * A finer region through which to build a road can nowhere be found. The vast amount of timber and stone, granite and marble, will furnish an inexhaustible resource of material for its construction. * * * * *

"I find that my previous ideas of the Rocky Mountain range are, so far as this section is concerned, entirely erroneous. Instead of a vast pile of rock and mountains, almost impassable, I find a fine country, well watered by streams of clear cold water, and interspersed with meadows covered with a most luxuriant grass."

From the summit the line of road is said to descend by easy grades into the St. Mary's or Bitter Root valley, of which Lieut. MULLEN, of the expedition, says: " This valley is not only capable of grazing immense bands of stock of every kind, but is also capable of supporting a dense population. The mountain slopes on either side of the valley afford at all seasons, even during the most severe winters, grazing grounds in abundance, while the mountains are well timbered with pine, equal in every respect to the well-known and noted pine of Oregon. This section connects with another of equal if not superior importance, that of the Cœur d'Aléne country, which again connects directly by a beautiful section with the country at and near the Walla Walla—thus showing that from the main chain of the Rocky mountains to the mouth of the Columbia we possess a rich, fertile, and productive area, that needs but the proper means and measures employed to be turned to public and private benefit."

In his description of one of these mountain valleys, Mr. A. W. TINKHAM, a civil engineer of the expedition, says: "The soil is fertile, and there are many agreeable and promising locations for farming, where a good soil, plenty of good wood sufficiently near for lumbering or fuel, pure cool water, good grazing, an agreeable and healthy climate, and a pleasing prospect, are inducements not often united, and are sufficiently attractive to throng these mountain valleys at no distant day with a central population of vast importance—making, in the heart of the mountains, and mid-way between the Missouri and Columbia, a central depot of supplies, a distributing point of labor and materials, and finally a region productive of valuable exports."

It being the general opinion on the Atlantic side that this route for a railroad, being so far north, must of necessity meet with insurmountable difficulties from snow, I will give some few extracts relative thereto from Gov. STEVENS's report of the country from the head of Lake Superior to the Red river of the north. The Hon. H. M. RICE, in a letter to Gov. STEVENS, says: "For several years I had trading posts extending from Lake Superior to the Red river of the north from 46° to 49° north latitude, and never found snow so deep as to prevent supplies from being transported from one part to another with horses. * *

"Owing to its altitude, the atmosphere is dry beyond belief, which accounts for the absence of frosts in the fall, and for the small quantity of snow that falls in a country so far north."

A. CUBERTSON, esq., a resident at Fort Benton for 20 years, says: "In regard to my observations on the Upper Missouri during upwards of 20 years, I find, by referring to notes taken of trips during the winter season from St. Louis to Fort Benton, that the snows differ from one year to another. The average depth might be estimated at 12 inches, say from 1st December to 1st March."

Lieut. GROVER, of the expedition, who crossed the summit of the Rocky mountains on the 12th of January, says: "On the 9th and 10th we worked along slowly over the bare ground to near the base of the main chain of mountains. * * * * * On the 12th we passed the dividing ridge, upon which the snow lay to the depth of one foot, and in no place where undisturbed did it exceed this."

Having no other reliable data at hand, from which to give a description of this Territory, I have availed myself of the foregoing extracts, which I find in the very able reports of several of the officers connected with Governor Stevens's expedition, which I have thought would serve the double purpose of going to show, not only the favorable character of the country between the Cascade and Rocky mountains, but that these ranges can be crossed by either railway or wagon-road.

FAYETTE McMULLIN.

MEMORIAL OF CITIZENS OF WASHINGTON TERRITORY TO CONGRESS, RELATIVE TO GRAY'S HARBOR.

To the Honorable the Senate and House of Representatives of the United States in Congress assembled:

The undersigned, your memorialists, citizens of Washington Territory, would respectfully and most earnestly call the attention of Congress to one of the most important and interesting portions of country on the Pacific coast, to wit: That lying upon and adjacent to Gray's harbor, and rivers emptying into it, and which, from the explorations made within the past year, we are enabled to describe with tolerable accuracy.

Gray's harbor, situated some fifty miles north of the mouth of Columbia river, is a bay extending some twenty miles into the interior, and is about 20 miles in width from north to south; and has a good entrance, with thirty feet of water in the channel. The bay receives four rivers: the Chehalis, the Wiskaw, the North river, and the East river.

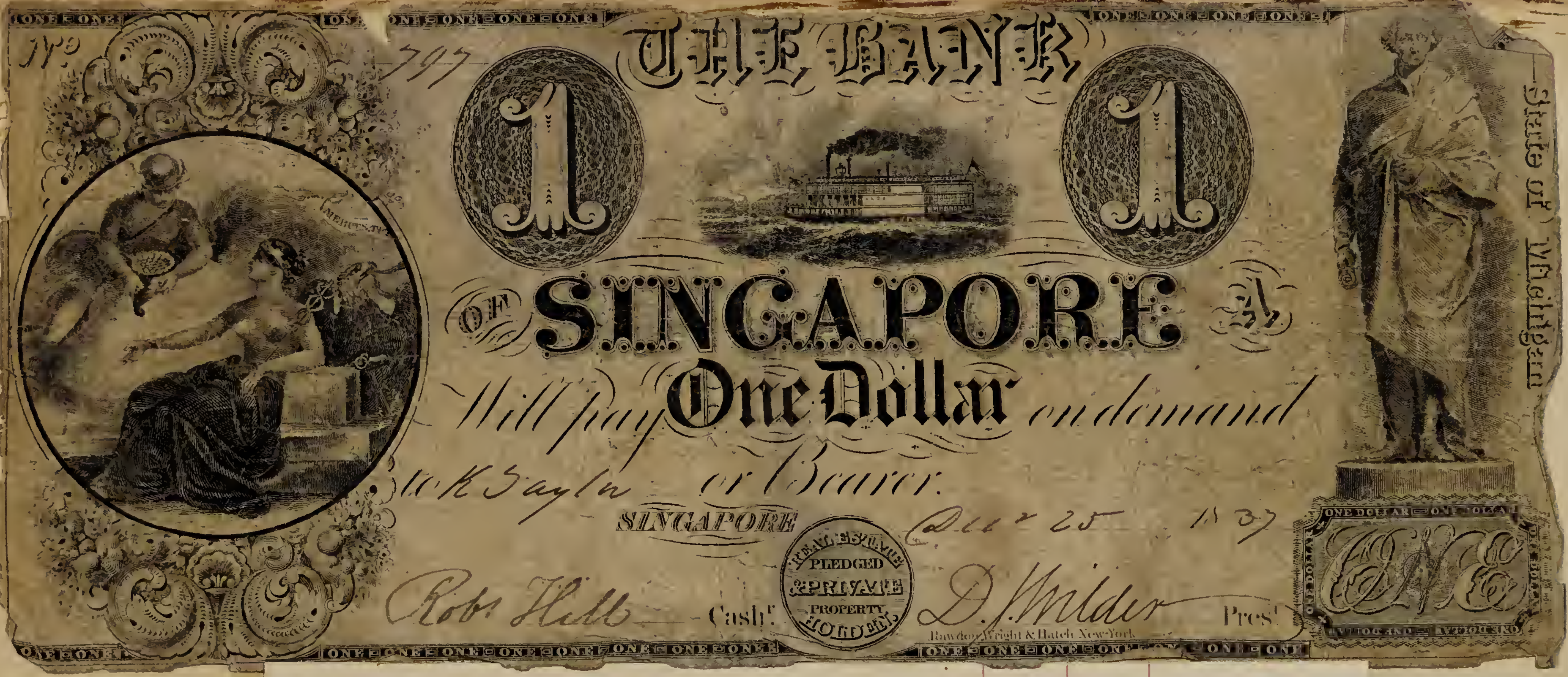
The Chehalis is navigable for more than half the year for steamboats one hundred miles, or thereabouts, from its mouth, and all seasons of the year for the distance of about fifty miles, and draining one of the most fertile portions of country on the western declivity of the Rocky mountains—in extent (including that of its tributaries) about one hundred miles from north to south, and about the same distance from east to west; covered with fine timber for the manufacture of lumber; interspersed with rich prairies, and drained by numerous streams affording abundance of water-power for manufacturing purposes. Settlements are being made along the whole extent of the Chehalis river, and important improvements going on, on most of its tributaries; among which, entering from the north, are the Minutia, the Satsop, and Black rivers, all of which are navigable for half the year, for small steamboats, for a considerable distance into the interior.

The other three rivers before mentioned, emptying into Gray's harbor on the north, viz: the Wiskaw, North and East rivers, are navigable into the interior for the varying distances of twenty to forty miles, flowing through rich and fertile valleys, interspersed with prairies and dense forests of some of the best house and ship-building timber in the world. Rising as these rivers do in the north, towards Cape Flattery and Mount Olympus, and draining a wide extent of country, reaching from the vicinity of Puget sound to the coast, the commerce of their valleys must necessarily concentrate at Gray's harbor, it being the only outlet to the ocean for about one hundred and fifty miles south of Cape Flattery, thus making it one of the most important ship emporiums on the Pacific seaboard.

Your memorialists would further state, from information derived from masters of vessels who have entered this bay, that the entrance is less difficult than most harbors on this coast, and that in view of the great advantages that present themselves in this interesting country—in addition to the extensive settlements that are being made for farming purposes—investments of capital are now being made at different parts of the bay for commercial purposes, with confident expectation that the government will, as soon as the facts shall be made known, authorize and provide such commercial facilities as the wants and interests of the government and people demand.

And your memorialists would beg leave to say, that in the first place we would ask that the harbor be surveyed by the government, and buoys placed to indicate the channel; secondly, that a light-house be erected at the entrance of the harbor; thirdly, that Gray's harbor be made a port of entry; fourthly, that mail facilities be afforded us by the steamer plying between San Francisco and Puget sound, and also mail facilities established from Gray's harber to Olympia, to the Cowlitz landing and to Shoal Water bay, for many parts are entirely unprovided with any mail facilities whatsoever; fifthly, that appropriations be made for a military road from Gray's harbor to intersect the military road leading from Fort Vancouver to Fort Steilacoom; also from the entrance of Gray's harbor to Port Townsend.

In conclusion, your memorialists would say, that from the facts we present to your honorable body, (facts that are incontrovertible,) we entertain strong hopes that the prayer of your memorialists will be granted.



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